

Proceeding of the
Asiatic Society of Bengal.
April. 1893.


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PROCEEDING.

OF THE

ASIATIC SOCIETY OF BENGAL.

FOR APRIL, 1893.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 5th April, 1893, at 9-15 p. m.

- THE HON'BLE SIR C. A. ELLIOTT, K. C. S. I., C. I. E.,
President, in the chair.

- The following members were present :—

Nawab Abdul Latif, Bábu Narsingh Dutt, G. A. Grierson, Esq., Dr. A. F. R. Hoernle, A. Hogg, Esq., T. H. Holland, Esq., Prince Jehán Qadr Muhammad, Wáhid Ali, Bahadur, Kumar Rameswar Mahah, J. Maun, Esq., T. R. Munro, Esq., L. de Nicéville, Esq., R. D. Oldham, Esq., The Hon'ble H. H. Rusley, Pandit Haraprasád Shastri, Dr. J. H. Tull Walsh, C. R. Wilson, Esq.

Visitors :—Lieut. G. C. Lister, Bábu Kali Coomarr Misser, C. W. Odling, Esq.

The minutes of the last meeting were read and confirmed.

Thirty presentations were announced, details of which are given in the Library List appended.

The following gentlemen, duly proposed and seconded at the last meeting of the Society, were ballotted for and elected Ordinary Members :—

Raja Bhupendra Bahadur Sinha,
Umes Chunder Batahyal, Esq., C. S.

The following gentlemen are candidates for election at the next meeting :—

- Babu Sambha Nath Sukul, Benares City, proposed by C. R. Wilson, Esq., seconded by C. Little Esq.

Raja Ram Chandra Vandya, Majurbhanga, District Balasore, proposed by Mahámahpádhyaia Mahesachandra Nyáyaratna, seconded by C. R. Wilson.

Major H. F. Gordon Forbes, Rifle Brigade, proposed by Surgeon Major General A. F. Bradshaw, seconded by C. W. Bolton, Esq.

The following gentlemen have expressed a wish to withdraw from the Society.

General Sir Henry Collett,
P. Donaldson, Esq.

The following gentlemen were elected to serve on the Anthropological Committee during the year:—

W. Crooke, Esq.,	E. A. Cunit, Esq.,
M. L. Dames, Esq.,	S. E. Peel, Esq.,
Bábu Saḡat Chandra Das,	Bábu Raj Kumar Sarbadhikari,
E. Thurston, Esq.	

The PHILOLOGICAL SECRETARY read reports on the following finds of Treasure Trove Coins:—

(1) Report on 30 old silver coins forwarded by the Deputy Commissioner of Kámrúp, with his No. 2789, dated the 9th September, 1892.

In his report, sent with his Memo. No. 4718, dated Gauhati, the 16th March 1892, the Officiating Deputy Commissioner of Kámrúp, states that the coins were found on the 24th January 1892, by a cooly in the employment of the Bengal and Assam Railway, presumably in the course of some excavations made for the Railway, though no particulars as to the place and manner of finding are mentioned.

Some of the coins are in a rather indifferent condition, and it was somewhat troublesome to identify them. But Bengal coins, of certain descriptions are not commonly found, and possess therefore an unusual numismatic interest. I have now ascertained that most of the coins are issues of the following of the so-called "Independent Sultáns," of Bengal: Fakhr-u-d-dín Mubárák Sháh (1338-1349 A. D.), Shamsu-d-dín Hyás Sháh (1339-1358 A. D.), Sikandar Sháh (1359-1389 A. D.), and Ghiyásu-d-dín 'Azam Sháh (1389-1396 A. D.). But one coin belongs to the Imperial Delhi issue of Mahmúd Sháh II (1392-1399 A. D.), and three others to that of one of the early Dependant Governors of Bengal, Ghiyásu-d-dín Bahádur Sháh (1310-1330 A. D.). Accordingly the coins of the find cover a period of nearly a century (from 1310 to 1399 A. D.).

The following is a detailed statement of them:—

A. Imperial Delhi issue:—

No. of
specimens.

I. MAHMÚD SHÁH II, son of Muḡammad Sháh and grandson of Firúz Sháh III.

One coin, like B. M. Cat. No. 432, but with *Abul Muḡaffar*; and date [7]96.

1 1

B. Provincial Bengal issue :—

II. GHIYÁS-U-D-DÍN BAHÁDUR SHÁH.

Three coins, like B. M. Cat., Nos. 4-9, but dates and mints on margin destroyed by shroff-mark cuts 3 3

C. Independent Bengal issues :—

III. FAKHRI-D-DÍN MUBÁRAK SHÁH.

Two coins, like B. M. Cat., Nos. 10-13, and Chronicles, No. 220 ; mint Sonárgaon, dates 747, 74*, on margins damaged by shroff-marks 2 2

IV. SHAMSU-D-DÍN ILYÁS SHÁH.

1, Two coins, like B. M. Cat., No. 17, but mints and dates on margin destroyed by shroff-marks 2
 2, Three coins, like B. M. Cat., No. 20, but mints and dates lost as above 3
 3, One coin, like B. M. Cat., No. 23, mint Sonárgaon, date [7]5*, damaged as above 1 6

V. SIKANPAR SHÁH.

1, One coin, like B. M. Cat., No. 27, mint and date lost, as above. 1
 2, Three coins, like B. M. Cat., No. 32, but mint and dates on margin cut away 3
 3, Two coins, like B. M. Cat., No. 37, mint apparently Firúzábád, dates lost as above 2
 4, Three coins, like B. M. Cat., No. 46, mint and dates damaged as above 3 9

VI. GHIYÁS-U-D-DÍN 'AZAM SHÁH.

1, One coin, like B. M. Cat., No. 57, but mint and date lost as above 1
 2, One coin, like B. M. Cat., No. 59, date 790, mint lost as above 1
 3, One coin, like B. M. Cat., No. 60, mint and date lost as above 1
 4, Five coins, like B. M. Cat., No. 63, but mint and dates lost as above 5
 5, One coin, new, of uncertain attribution, mint and date lost as above. The coin is anonymous, both the obverse and reverse only showing varieties of the usual formula 1 9

Total ... 30

(II) Report on 56 old coins forwarded by the Political Agent, Chhatisgarh Feudatories, Raipur, with his No. 539, dated 18th January, 1893.

The coins are stated to have been found "recently" in the Feudatory State of Sarangarh. With the coins was also forwarded a "metal plate image brass piece," which appears to have been found with the coins.

One of the coins is of pure gold; all the others are of a mixed metal containing gold in varying proportions, which could only be ascertained by means of a regular assay.

They are of two different sizes. Ten (incl. the pure gold coin) are of a large size, $\frac{3}{4}$ inch in diameter, and 46 are of a small size, $\frac{1}{2}$ inch in diameter.

They all show on the obverse, the standing figure of Hanumán, with body turned to front, but feet to right, and head to left. In the proper right hand he apparently holds a club. On the right and left, in the field, are two scrolls, one of which probably represents his tail. The whole is enclosed within a marginal circle of dots. The figure is fairly distinct on the gold coin, but very crude on those of mixed metal. The reverse, of all coins, shows the name of the king, in large Nāgarī characters, peculiar to the time, and again enclosed within a marginal circle of dots.

All the coins belong to kings of the so-called Kalachuri dynasty of Chedi, who had their capital at Ratnapur (Ratanpur) in Northern Chhatisgarh. Information on this dynasty will be found in Sir Alexander Cunningham's *Archæological Survey Reports*, Vol. XVII. p. 71 fg. The coins represented in the find, belong to the following members of the dynasty: Jājalla Deva (26 specimens), Ratna Deva (29), Prithvī Deva (1 pure gold). In the Report, referred to, the following genealogical list is given:—

Serial No.	Probable date of accession.	Names of Kings.	Actual dates from Inscriptions.
1,	1000 A. D.	Kakalla.	
2,	1030 "	Ratna Raja.	
3,	1060 "	Prithvī Deva.	
4,	1090 "	Jājalla Deva.	1115 A. D.
5,	1120 "	Ratna Deva.	
6,	1140 "	Prithvī Deva.	1145, 1150, 1159, 1168 A. D.

The coins may belong either to Nos. 2, 3, 4 of the list, or to Nos. 4, 5, 6; more probably to the latter three kings.

The find is of considerable numismatic interest, for two reasons: In the first place: coins of the Chedi dynasty are very rare; of Gangaya Deva, gold, silver and copper coins are known (see Archaeological Survey Reports, Vol. X, p. 25); and of Prithvi Deva, gold coins are "sufficiently common" (see Prinsep's *Indian Antiquities*, Vol. I, p. 292, and Thomas' *Chronicles*, No. 17, p. 19). But, so far as I know, no coins of any other king have become known.

In the second place, all coins of the Kalachuri dynasty which have hitherto become known show on the obverse "the four-armed goddess Durgá, seated to front." On the other hand the Chandel kings show, on their coins, either the goddess Durgá seated, or Hanumán standing; and it has been, hitherto, supposed that the substitution of Hanumán for Durgá was due to the Chandel kings, who partly imitated the Kalachuri coinage, partly departed from it, in the obverse device of their own coinage (see Archaeological Survey Reports, Vol. X, p. 25). The coins of the present find prove that this supposition is not any longer tenable, and that the Kalachuri kings, already, possessed a coinage with the obverse device of Hanumán. The lists of Chandel kings (see Archaeological Survey Reports, Vol. XXI, p. 80, Journal As. Soc. Beng., Vol. L, p. 23) contain no names of Jájalla Deva and Ratna Deva. They contain a king Prithvi Varma, but no Prithvi Deva; and it may be noted that while the Kalachuris are always distinguished as "Deva," the Chandels are always called "Varma,"—a circumstance which also proves that the "Prithvi Deva," whose gold coins are described by Prinsep and Thomas (above referred to), is the Kalachuri king of that name, not the Chandel Prithvi Varma.

The following is a detailed list of the coins:—

I. JÁJALLA DEVA, about 1090–1120 A. D.; 26 specimens, all of mixed metal.

Obverse legend—श्री मज्ज श्री-maj-Ja

जज्जदेव jalla Deva.

1, large size	9
2, small size	17 26

II. RATNA DEVA, about 1120–1140 A. D., 29 specimens, all of mixed metal, and all of small size 29

Obverse legend: श्रीमद् श्री-mat-Ra-

न देव tna Deva.

III. PRITHVI DEVA, about 1140–1170 A. D., one specimen, pure gold; large size.....	1
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Obv. legend: श्री मज्ज श्री-mat-Pri-

थी देव thvi Deva.

Total ...	56
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THE PHILOLOGICAL SECRETARY read the following extract from a letter received from Professor Bühler :—

"I am just preparing a note for the *Academy* on the question of the *Prithvirāj Rāsan*, and shall have to vote for those who declare it a forgery. A pupil of mine, Mr. James Morison, has now studied the Sanskrit *Prithivirāja-vijaya*, which I found in 1875 in Káshmir, together with its commentary by Jonarāja, written between A. D. 1450-75. The author was certainly a contemporary of Prithivirāja and one of his court poets. He probably was a Kashmirian and was a thoroughly good *Kvri* and *Pandit*. His account of the Chauhāns contradicts Chand's in every particular and agrees with that of the inscriptions of V. S. 1030 and V. S. 1225.* Prithivirāja's pedigree is exactly that given in these documents, and various synchronistic facts mentioned in the *Vijaya* also agree with what we know from other sources, *e. g.*, the Málwá and Gujarát inscriptions.

With regard to Prithivirāja's father Someśvara, we now learn that he was the son of Arjorāja and his Chaulukya wife Kāñchanadeví, the daughter of the great King Jayasimha Siddharāja of Gujarát. Arjorāja's first wife was Sadhavā, a princess of Mārwar, who bore him two sons, one whose name is not given in the *Vijaya* or in the inscriptions and Vighraharāja-Viśaladeva.

The unnamed eldest son murdered his father, or as the poet says, 'rendered to him the same service which Bhṛigu's son (Paraśurāma) rendered to his mother,' and 'then went out like a *baṭṭī*, leaving behind an evil smell.' Vighraharāja succeeded his father. After him a son of his came to the throne, and then a son of the parricide, Prithivibhaṭa on Prithivirāja.

Then Someśvara was raised to the throne by the ministers. All this long time he had been in foreign countries. His maternal grandfather Jayasimha had educated him, and later on he had gone to Tripura, the capital of Chedi (the Jabalpur district,) and had married Karpūradeví, the daughter of the Chedi King. The latter bore to him Prithivirāja (the hero of the poem) and Harirāja. Someśvara died soon after his accession to the gaddi of Ajayamera, and Karpūradeví governed during her son's minority, with the help of a minister Kádamba-Vāma, *i. e.*, Vāma of the Kádamba race.

There is not a trace of a statement that Prithivirāja was the son of the daughter of Ananṅapála the king of Delhi, or that he was adopted by him; and it is remarkable that the old Muhammadan historians do not say that Prithivirāja ruled over Delhi. With them, he is sim-

* Vide J. A. S. B., Vol. LV, Part I, for 1896, pp. 15 and 22.—Ed.

ply king of Ajmer, and was slain in Ajmer for treason against his conqueror, who had left him some power in his own country.

I am afraid that the history of this period sadly wants revision, and Chand's Râsau had better be left unprinted. It is a forgery as Marârdhân of Jodhpur, and Syâmaladâs of Udaipur, have said long ago. According to the *Vijaya*, the name of Prithivirâja's *Vandirâja*, or chief bard, was Prithivibhata, not Chand Bardâi."

Dr. Hoernle exhibited two rare gold Gupta Coins sent by Mr. Rivett-Carnac to be added to his well-known Gupta coin collection lately purchased by the Government of India for the Indian Museum. One of them, he said, was a coin of Kumâra Gupta I, of the so-called "Swordsman" type. This was one of the rarest types of the Gupta class of coins. It will be seen by a reference to Mr. Smith's descriptive catalogue of those coins, published in the Journal of the Royal Asiatic Society for 1889 (p. 93), that hitherto only two coins of the Swordsman type were known to exist, one in the British Museum and the other in the Bodleian Library in Oxford. They are both said to have been found in the bed of the Ganges near Patna. Where the coin, now belonging to the Indian Museum was found, is not known. But it is a genuine specimen, and has a gold loop soldered to its rim, showing that it was used as an amulet or ornament. The name of Swordsman is given to the coin, because it shows on its obverse the standing figure of king Kumâra Gupta, with his left hand resting on the hilt of a straight sword which hangs from his waist. The king's name is given in full on the reverse, and on the obverse under the abbreviation *Ku*. This is one of the most valuable additions made to the coin cabinet of the Indian Museum.

The other coin is one of Chandra Gupta II, of the so-called "Umbrella" type. It is fully described in Mr. Smith's Catalogue, p. 91, where seven known specimen are enumerated. It is therefore also one of the rarer types of the Gupta class of coins. The reverse figure (female goddess), is usually represented as standing on a low pedestal or on a monster (?); but in the present specimen she is not standing on anything at all, unless (which is possible) the object on which she stood, is entirely clipped away. This coin, too, has a loop attached to it, showing that it was used to be worn.

Dr. Hoernle, also, exhibited a gold Indo-Scythian coin, lately sent by Mr. Rivett-Carnac. It belongs to the well-known kind of which numerous specimens are known to exist, showing on the obverse the Nâgarî letters *va* and *su*, placed one above the other, in Chinese fashion. These probably give the name of the Indo-Scythian king Vasu Deva, who reigned towards the end of the 2nd cent. A. D.

Mr. C. R. Wilson exhibited two old plans of old Fort William and old Calcutta and read a short note on the subject by Dr. Busteed. The note will be published in the Journal, Part I.

The following papers were read:—

1. *On the Early Study of Indian Vernaculars in Europe.*—By G. A. GRIERSON, Esq., C. S., *Philological Secretary.*

The paper will be published in the Journal, Part I.

2. *Two Species of Pedicularis.*—By D. PRAIN, Esq., M. B.

The paper will be published in the Journal, Part II.

3. *The Hindus of Eastern Bengal—founded on materials collected by the late Dr. J. Wise. Communicated by the Anthropological Secretary.*

4. *The Muhamadans of Eastern Bengal—founded on materials collected by the late Dr. J. Wise. Communicated by the Anthropological Secretary.*

These papers will be published in the Journal, Part III.

LIBRARY.

The following additions have been made to the Library since the meeting held in March last.

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Anstin. Texas Academy of Science,—Transactions, Vol. I, No. 1.

Baltimore. Johns Hopkins University,—Circulars, Vol. XII, No. 103.

Batavia. Bataviaasch Genootschap van Kunsten en Wetenschappen, Notulen, Deel XXX, Aflevering 4.

————. ————. Tijdschrift voor Indische Taal-, Land- en Volkenkunde, Deel XXXVI, Aflevering 3.

Berlin. Berliner Entomologische Zeitschrift,—Band XXXVII, Heft 1 und 3.

Bombay. The Indian Antiquary,—Vol. XXII, Part 260.

Budapest. La Société Hongroise de Géographie,—Bulletin, Tome XX, Fasc. 8-10.

Calcutta. Geological Survey of India,—Records, Vol. XXVI, Part I.

————. Indian Engineer,—Vol. XV, No. 307.

————. Indian Engineering,—Vol. XIII, Nos. 9-13.

————. Maha-Bodhi Society,—Journal, No. XI, 1893.

————. Photographic Society of India,—Journal, Vol. VI, No. 3.

Copenhagen. Kongelige Nordiske Oldskrift-selskab,—Aarbøger, Bind VII, Hefte 3.

Frankfurt. Des Naturwissenschaftlichen Vereins des Reg-Bez Frankfurt,—Helios, Jahrg. X, Nrn. 5-8.

———. Societatum Litterarum, Jahrg. VI, Nos. 9 and 10.

Geneva. La Société de Physique et d' Histoire Naturelle de Genève,—Mémoires, 1891.

Hague. Koninklijk Instituut voor de Taal-, Land- en Volkenkunde van Nederlandsch—Indië,—Bijdragen, Deel VIII, Aflevering 1.

Leipzig. Der Deutschen Morgenländischen Gesellschaft,—Zeitschrift, Band XLVI, Heft 4.

———. Der K. Sächsischen Gesellschaft der Wissenschaften zu Leipzig,—Verhandlungen, Math-Phy Classe, Nrn. I—III, 1892.

———. Phil-Hist. Classe, Nrn. I und II, 1892.

Liege. La Société Géologique de Belgique,—Annales, Tome XVIII, No. 3; XIX, 4.

London. The Academy,—Nos. 1085-88.

———. Anthropological Institute,—Journal, Vol. XXII, Nos. 1 and 2.

———. The Athenæum,—Nos. 3408-11.

———. Institution of Electrical Engineers,—Journal, Vol. XXI, No. 102; XXII, 103.

———. Nature,—Vol. XLVII, Nos. 1216-19.

———. Royal Astronomical Society,—Memoirs, Vol. L.

———. Monthly Notices, Vol. LIII, No. 3.

———. Royal Geographical Society,—Journal, Vol. I, Nos. 1-3.

———. Proceedings, Vol. XIV, No. 12.

———. Royal Microscopical Society,—Journal, Part 6, 1892.

———. Royal Society,—Vol. LI, No. 314; LII, 315-17.

———. Royal Statistical Society,—Journal, Vol. LV, Part 4.

Manchester. Manchester Literary and Philosophical Society,—Memoirs and Proceedings, Fourth Series, Vol. VI.

Mexico. La Sociedad Científica "Antonio Alzate,"—Memorias y Revista, Tome VI, Nos. 5 y 6.

Mussoorie. The Indian Forester,—Vol. XIX, No. 3.

Paris. Revue Géographique,—Nos. 205 et 206, 1892.

———. Société de Géographie,—Comptes Rendu des Séances, Nos. 2-4, 1893.

———. La Société Nationale des Sciences Naturelles et Mathématiques de Cherbourg,—Mémoires, Tome XXVIII.

Rome. La Società Degli Spettroscopisti Italiani,—Memorie, Tome XXIII, No. 2.

St. Petersburg. Russian Imperial Geographical Society,—Proceedings, Tome XXVIII, No. 5.

- Schaffhausen. La Société Entomologique Suisse,—Bulletin, Tome VIII, No. 10.
- Taiping. Perak Government,—Gazette, Vol. VI, Nos. 5-7; and Index to Vol. V.
- Tokyo. Imperial University,—Journal of the College of Science, Vol. V, Part 3.
- Turin. La R. Accademia delle Scienze di Torino,—Atti, Tome XXVIII, Nos. 1-3; et Elenco degli Accademici Residenti, Nazionale non Residenti Stranieri e corrispondenti al 10 Gennaio 1893.
- Vienna. Der Anthropologischen Gesellschaft in Wien,—Mittheilungen, Band II—V; VI, Nr. 5.
- . Der K. K. Zoologisch-botanischen Gesellschaft in Wien,—Verhandlungen, Band XLII, Heft 3 und 4.
- Yokohama. Asiatic Society of Japan,—Transactions, Vol. XX, Part 2.

BOOKS AND PAMPHLETS.

presented by the Authors, Translators, &c.

- ALCOCK, DR. A. An account of the collection of Deep-Sea Asteroiden, being Natural History Notes from H. M. Indian Marine Survey Steamer "Investigator," Commander C. F. Oldham, R. N., commanding. Series II., No. 7. (From the Annals and Magazine of Natural History, series 6th, Vol. XI). 8vo. London, 1893.
- LYMAN, BENJAMIN SMITH. Shippen and Wetherill Tract. 8vo. Philadelphia, 1893.
- RÁY, PRATAPA CHANDRA. The Mahabharata, translated into English prose, Part LXXVIII. 8vo. Calcutta, 1892.

MISCELLANEOUS PRESENTATIONS.

- Report of the Agricultural Bank, Kutra, Tehsil Biswan, District Sitapur, for the year 1892. 8vo. Lucknow, 1813.
- AGRICULTURAL BANK, KUTRA.
- A Calendar for ten years from 1891 to 1900 A. D. with corresponding dates of Samvat, Fasli and Hijri Eras. 8vo. Lucknow, 1892.
- MUNSHI ALI AHMAD KHAN.
- Report of the sixty-second Meeting of the British Association for the Advancement of Science held at Edinburgh in August 1892. 8vo. London, 1893.
- BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.
- Census of India, 1891—Assam, Vols. I and II. Fcp. Shillong, 1892.
- CHIEF COMMISSIONER OF ASSAM.
- Annual Report of the Department of Agriculture for the year 1891-92. 8vo. Brisbane, 1892.

BAILEY, F. M. Contributions to the Queensland Flora (Bulletin, Department of Agriculture, Brisbane, Nos. 20 and 21). 8vo. Brisbane, 1893.

DEPARTMENT OF AGRICULTURE, BRISBANE.

The Allahabad Review for January 1893. 8vo. Allahabad, 1893.

THE EDITOR OF THE ALLAHABAD REVIEW.

GREY, EDWARD. The Travels of Pietro della Vallo in India, Vols. I and II (Hakluyt Society). 8vo. London, 1892.

Indian Antiquary for February 1893. 4to. Bombay, 1893.

North Indian Notes and Queries for February 1893. 4to. Allahabad, 1893.

SWYNNERTON, REV. CHARLES. Indian Night's Entertainment. 8vo. London, 1892.

GOVERNMENT OF INDIA, HOME DEPARTMENT.

Illustrations of the Zoology of H. M. Indian Marine Surveying Steamer

• "Investigator," Part I. 4to. Calcutta, 1892.

GOVERNMENT OF INDIA, MARINE DEPARTMENT.

Epigraphia Indica of the Archaeological Survey of India, Vol. II, Part

• 12. 4to. Calcutta, 1892.

Census of India, 1891. Vol. XIX, The Punjab and its Feudatories, Part I. Fcp. Calcutta, 1892.

GOVERNMENT OF INDIA, REVENUE AND AGRI. DEPARTMENT.

Annual Administration Report of the Forest Department, Madras Presidency, for the official year 1891-92. Fcp. Madras, 1892.

GOVERNMENT OF MADRAS.

Hand-Books of Commercial Products, No. 8. Iron, southern districts, Madras Presidency (Imperial Institute Series). 8vo. Calcutta, 1892.

INDIAN MUSEUM.

OLCOTT, HENRY S. The Kinship between Hinduism and Buddhism. 8vo. Calcutta, 1893.

The Maha-Bodhi Society; its constitution, Rules and List of Officers. 8vo. Calcutta, 1893.

MAHA-BODHI SOCIETY.

The Indian Antiquary for April 1889. 4to. Bombay, 1889.

THE MANAGER, PIONEER PRESS, ALLAHABAD.

Monthly Weather Review for October 1892. 4to. Calcutta, 1893.

Original Meteorological Observations of Calcutta, Allahabad, Lucknow, Lahore, Nagpur, Bombay, and Madras, for October 1892. 4to. Calcutta, 1892.

METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA.

Bulletin of the Microscopical Society of Calcutta, Vol. II, No 7. 8vo. Calcutta, 1893.

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Statistical Tables of the Protestant Missions in India, Burma and Ceylon for 1890. 8vo. Calcutta, 1892.

THE REV. J. W. THOMAS.

Observations faites à l' Observatoire Météorologique de l' Université de Kiew, Juillet, 1892. 8vo. Kiew, 1892.

L' UNIVERSITE' DE KIEW.

PERIODICALS PURCHASED.

Allahabad. North Indian Notes and Queries,—Vol. II, No. 12.

Berlin. Deutsche Litteraturzeitung,—Jahr. XIII, Nrn. 48-52; XIV, 1 und 2.

——. Zeitschrift für Ethnologie,—Heft IV, 1892.

Calcutta Review,—Vol. XCVI, No. 192.

Indian Medical Gazette,—Vol. XXVIII, No. 3.

Cassel. Botanische Centralblatt,—Band LI, Heft 13; LII, 8-13; LIII, 1.

Geneva. Archives des Sciences Physiques et Naturelles,—Tome XXIX, No. 2.

Göttingen. Der Königlichen Gesellschaft der Wissenschaften,—Nachrichten, Nrn. 14 und 15, 1892.

Leipzig. Annalen der Physik und Chemie,—Band XLVIII, Heft 2.

——. —— . Beiblätter, Namensregister zum I-XV. Bande (1877-1891.)

London. The Annals and Magazine of Natural History,—Vol. XI (6th Series), Nos. 60 and 61.

——. The Chemical News,—Vol. LXVIII, Nos. 1734-37.

——. The Entomologist,—Vol. XXV, No. 355; XXVI, 356.

——. The Entomologist's Monthly Magazine,—Vol. III (2nd series), No. 36; IV, 37.

——. The Ibis,—Vol. V (6th series), No. 17.

——. The Journal of Botany,—Vol. XXX, No. 360; XXXI, 361.

——. The London, Edinburgh and Dublin Philosophical Magazine,—Vol. XXXIV (5th series), No. 211; XXXV, 212.

——. The Messenger of Mathematics,—Vol. XXII, No. 8.

——. Numismatic Circular,—Nos. I-IV.

——. The Quarterly Journal of Microscopical Science,—Vol. XXXIV, Parts 1 and 2.

——. Rhopalocera Exotica,—Part XXIII, 1893.

New Haven. The American Journal of Science,—Vol. XLIV, No. 264; XLV, 265.

Paris. L' Académie des Sciences,—Comptes Rendus des Séances, Tome CXV, Nos. 21-26; CXVI, 1-2; et Tables, Tome CXIV.

Paris. *Annales de Chimie et de Physique*,—Tome XXVII, Décembre 1892; XXVIII, Janvier, 1893.

——. *Revue Critique d' Histoire et de Littérature*,—Tome XXXIV, Nos. 48-52; XXXV, 1 et 2.

•——. *Revue Scientifique*,—Tome LI, Nos. 7-10.

BOOKS PURCHASED.

FICK, AUGUST. *Wörterbuch der Indogermanischen Sprachen*, 4 Auflage, Band I. 8vo. Göttingen, 1891.

GOEJE, M. J. de. *Bibliotheca Geographorum Arabicorum*. Part VII. 8vo. Lugduni Batavorum, 1892.

MAISEY, General F. C. *Sánchi and its Remains: a full description of the ancient buildings, sculptures, and Inscriptions at Sánchi, near Bhilsa, in Central India*. 4to. London, 1892.

RIPPON, ROBERT H. F. *Icones Ornithopterorum: a Monograph of the Rhopalocerous genus Ornithoptera, or bird-wing butterflies*, Parts I—V. Fol. London, 1892.

SIEG, EMIL. *Bhâradvâjaçiksha cum versione latina, excerptis ex commentario, adnotationibus criticis et exegeticis*. 8vo. Berlin, 1892.

WRIGHT, G. FREDERICK and HAYNES, Prof. HENRY W.—*Man and the Glacial Period*, (The International Scientific Series, Vol. LXXII). 8vo. London, 1892.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL,
FOR MAY, 1893.

• The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 3rd May, 1893, at 9-15 P. M.

• COLONEL J. WATKINSON, B. S. C., in the Chair.

• The following members were present :—

Dr. A. W. Alcock, Bábu Sarat Chandra Das, G. A. Grierson, Esq., T. H. Holland, Esq., C. Little, Esq., R. D. Oldham, Esq., Dr. D. Prain, Dr. J. H. Tull Walsh.

The minutes of the last meeting were read and confirmed.

Twenty-nine presentations were announced, details of which are given in the Library List appended.

The following gentlemen, duly proposed and seconded at the last meeting of the Society, were ballotted for and elected Ordinary Members :—

Bábu Sambha Nath Sukul.

Raja Ram Chandra Vandyá.

Major H. F. Gordon Forbes.

• The President announced that the Council had elected Dr. J. H. Tull Walsh to officiate as General Secretary in the place of Mr. C. R. Wilson.

• The Secretary reported that His Highness the Maharajah Scindia had compounded his subscription as a non-resident member by the payment in a single sum of Rs. 300.

The following papers were read :—

1. *Some observations of the electrical action of Light upon Silver and its Haloid compounds.*—By COLONEL J. WATERHOUSE, B. S. C., Assistant Surveyor General, Survey of India.

(Abstract).

The author gives a brief summary of former observations on the generation of electric currents by the influence of light on metals immersed in various solutions, made by Ed. Becquerel, Hunt, Grove, Egoroff, Hankel, Minchin and others, and after describing the apparatus he uses, proceeds to give the results of his observations of the electric currents produced by light on pure silver plates immersed in water, dilute acids, and weak alkaline solutions.

The paper will be published in full in the Journal, Part II.

2. *A review of the genus Colquhounia.*—By D. PRAIN, Esq., M. B.

3. *On the flora of Nancondam and Burren Island.*—By D. PRAIN, Esq., M. B.

These papers will be published in the Journal, Part II.

LIBRARY.

The following additions have been made to the Library since the meeting held in April last.

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—Circulars, Vol. XII, No. 104.

Bombay. The Indian Antiquary,—Vol. XXII, Part 261.

Calcutta. Asiatic Society of Bengal,—Proceedings, January, 1893.

———. ———. Journal, Part I, No. 4, 1892; and Index to Part II, 1892.

———. Indian Engineering,—Vol. XIII, Nos. 14-17.

———. Maha-Bodhi Society,—Journal, Vol. I, No. 12.

———. Photographic Society of India,—Journal, Vol. VI, No. 4.

Copenhagen. Kongelige Nordiske Oldskrift-selskab,—Aarboger, II Række, Bind VII, Heft 4.

Hamburg. Naturwissenschaftlichen Verein in Hamburg,—Abhandlungen, Band XII, Heft 1.

Havre. Société de Géographie Commercial du Havre,—Bulletin, Janvier—Février, 1893; Annuaire, 1893.

Helsingfors. Societatis Scientiarum Fennicæ,—Acta, Tomus XVIII.

Leipzig. Der Königlich Sachsische Gesellschaft der Wissenschaften zu Leipzig,—Berichte, Math. Phys. Classe, IV-VI, 1892.

London. The Academy,—Nos. 1089-93.

———. The Athenæum,—Nos. 3412-16.

———. Institution of Electrical Engineers,—Journal, Vol. XXII, No. 104; and Index to Vol. XXI.

———. ———. List of Officers and Members, corrected up to 31st January, 1893.

———. Nature,—Vol. XLVII, Nos. 1220-24.

———. Royal Astronomical Society,—Monthly Notices, Vol. LIII, Nos. 4 and 5.

———. Royal Geographical Society,—Geographical Journal, Vol. I, No. 4.

Moscow. La Société Impériale des Naturalistes de Moscou,—Bulletin, No. 3, 1892.

Mussoorie. The Indian Forester,—Vol. XIX, No. 4.

Paris. Revue Géographique, Nos. 207 et 208, 1893.

———. Société de Géographie,—Comptes Rendus des Séances, Nos. 5-7, 1893.

Pisa. La Società Toscana di Scienze Naturali,—Atti, Processi Verbali, 3 Dicembre, 1892.

Rome. La Società Degli Spettroscopisti Italiani,—Memorie, Tome XXII, No. 3.

St. Petersburg. Comité Géologique,—Bulletins, Vol. XI, Nos. 5-8, et Supplément au Tome XI.

———. ———. Mémoires, Tome XII, No. 2.

———. Russian Imperial Geographical Society,—Proceedings, Vol. XXIX, No. 1.

Sydney. Linnean Society of New South Wales,—Proceedings, New Series, Vol. VII, Part 3.

———. Royal Society of New South Wales,—Journal and Proceedings, Vol. XXVI.

Taiping. Perak Government,—Gazette, Vol. VI, Nos. 8-10.

Vienna. Der K. K. Geologischen Reichsanstalt,—Verhandlungen, Nr. 17 und 18, 1892; 1, 1893.

BOOKS AND PAMPHLETS,

*presented by the Authors, Translators, &c.*DHURVA, H. H. *The Dawn of Indian Philosophy*, Fcp.———. *The Vedic Chronology*, Fcp.GRIERSON, G. A. *Notes on the District of Gaya*. 8vo. Calcutta, 1893.———. *The Inscriptions of Piyadasi*, Vol. II. By E. Senart. Translation. (Reprinted from the *Indian Antiquary*). 4to. Bombay, 1892.FRITSCH, DR. H. *Ueber die Bestimmung der Geographischen Länge und Breite und der drei Elemente des Erdmagnetismus durch Beobachtung zu Lande sowie erdmagnetische und geographische Messungen an mehr als tausend verschiedenen Orten in Asien und Europa ausgeführt in den Jahren 1867–1891*. 8vo. St. Petersburg, 1893.MITRA, SARAT CHANDRA. *A short Note on Burial-Customs among the Bhuinphār Brāhmans in the Sāran District*. 8vo. Bombay, 1893.———. *On some Ceremonies for Producing Rain*. 8vo. Bombay, 1893.———. *On the Indian Folk-beliefs about the Tiger*. 8vo. Bombay, 1893.*The New Reptile-House in the Calcutta Zoological Gardens*. 8vo.PENCK DR. A. *The construction of a Map of the World (From the Geographical Journal for March 1893)*. 8vo. London, 1893.

MISCELLANEOUS PRESENTATIONS.

Catalogue of Oriental Coins in the British Museum, Vol. X. 8vo. London, 1890.

BRITISH MUSEUM, LONDON.

The Report of the Carmichael Library, Benares, for 1892. 8vo. Benares, 1893.

CARMICHAEL LIBRARY, BENARES.

Report on the Lunatic Asylums of the Central Provinces for the year 1892. Fcp. Nagpur, 1893.*Returns of the Rail-borne Traffic of the Central Provinces, during the quarter ending 31st Décembre, 1892*. Fcp. Nagpur, 1893.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

WHITEAVES, J. F. *Contributions to Canadian Palæontology*, Vol. I. Part IV. 8vo. Ottawa, 1892.

GEOLOGICAL SURVEY OF CANADA.

THURSTON, EDGAR. History of the Coinage of the Territories of the East India Company in the Indian Peninsula : and Catalogue of the Coins in the Madras Museum. 8vo. Madras, 1890.

GOVERNMENT CENTRAL MUSEUM, MADRAS.

North Indian Notes and Queries, Vol. II, No. 12. 4to. Allahabad, 1893.

Report of the Leprosy Commission in India, 1890-91. 4to. Calcutta, 1890.

Usha, Vol. II, No. 6. 8vo. Calcutta, 1892.

GOVERNMENT OF INDIA, HOME DEPARTMENT.

WATT, GEORGE. A Dictionary of the Economic Products of India, Vol. VI, Part 2. 8vo. Calcutta, 1893.

GOVERNMENT OF INDIA, REV. AND AGRI. DEPTT.

Report on the Administration of the N.-W. Provinces and Oudh for the year ending 31st March, 1892. Fcp. Allahabad, 1893.

GOVERNMENT OF N.-W. P. AND OUDH.

Gazetteer of the Karnal District, 1890. 8vo. Lahore, 1892.

GOVERNMENT OF THE PUNJAB.

The Indian Journal of Education for April 1893. 8vo. Madras.

V. KALYANARAIN IYER, ESQ.

Monthly Weather Review for November 1892. Fcp. Calcutta, 1893.

Original Meteorological Observations of Calcutta, Allahabad, Lucknow, Lahore, Nagpur, Bombay and Madras, for November 1892. Fcp Calcutta, 1893.

METEOROLOGICAL REPORTER TO THE GOVT. OF INDIA.

Bulletin of the Microscopical Society of Calcutta, Vol. II, No. 8. 8vo. Calcutta, 1893.

MICROSCOPICAL SOCIETY OF CALCUTTA.

Catechism on Buddhism. 8vo. Berhampore, 1893.

COL. H. S. OLCOTT.

Return of Wrecks and Casualties in Indian Waters for the year 1891. Fcp. Calcutta, 1892.

PORT OFFICER, CALCUTTA.

Annual Report of the Sanitary Commissioner with the Government of India, 1891. Fcp. Calcutta, 1893.

SANITARY COMMISSIONER WITH THE GOVT. OF INDIA.

PERIODICALS PURCHASED.

Allahabad. North Indian Notes and Queries,—Vol. III, No. 1.

Braunschweig. Jahresbericht über die Fortschritte der Chemie und verwandter Theile anderer Wissenschaften,—Heft VII, 1888 ; III, 1889*.

- Calcutta. Indian Medical Gazette,—Vol. XXVIII, No. 4.
 Geneva. Archives des Sciences Physiques et Naturelles, No. 3, 1893.
 Gottingen. Der Konigl. Gesellschaft der Wissenschaften,—Göttingische gelehrte Anzeigen, Nrn 23-25, 1892; 1, 1893.
 Leipzig. Annales der Physik und Chemie,—Nr 3, 1893.
 ———. ———. Beiblätter, Nrn 2 und 3, 1893.
 London. The Chemical News,—Vol. LXVII, Nos. 1738-42.
 ———. Numismatic Circular,—No. 5, 1893.
 Paris. Revue Scientifique,—Tome LI, Nos. 11, 13-15.

BOOKS PURCHASED.

Ushā, Vol. II, No. 6. 8vo. Calcutta, 1892.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR JUNE, 1893.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 7th June, 1893, at 9-15 p. m.

DR. WILLIAM KING, B. A., in the Chair.

The following members were present :—

Dr. A. W. Alcock, P. N. Bose, Esq., Bábu Nobin Chand Bural, Bábu Sarat Chandra Chatterjee, C. A. Grierson, Esq., A. Hogg, Esq., The Rev. Fr. E. Lafont, C. Little, Esq., Kumar Ramcswar Maliáh, L. de Nicéville, Esq., Dr. J. H. Tull Walsh.

Visitors :—Dr. R. Anderson, H. Dawson, Esq., J. C. K. Johnston, Esq.

The minutes of the last meeting were read and confirmed.

Twenty-six presentations were announced, details of which are given in the Library List appended.

The following gentlemen are candidates for election at the next meeting :—

Bábu Radhikaranan Chatterji, Superintendent of the Estate of Rájá Govindalál Báí Bahadur, proposed by Pandit Haraprasad Shastri, seconded by Bábu Pauchanan Mukharji.

C. D. Mangós, Esq., Calcutta, proposed by Dr. J. H. Tull Walsh, seconded by C. A. Grierson, Esq.

Pandit Beni Madho Tribedi, Jodhpore, proposed by Dr. J. H. Tull Walsh, seconded by G. A. Grierson, Esq.

The following gentlemen have expressed a wish to withdraw from the Society :—

Bábn Radhaballabha Chaudhuri.

F. C. Channing, Esq., C. S.

The SECRETARY reported the death of the following members :—

James Wood-Mason, Esq., (Ordinary Member).

Professor J. O. Westwood (Honorary Member).

Mons. E. Renan (Honorary Member).

Dr. A. W. Alcock read an obituary notice of the death of Mr. Wood-Mason :—

James Wood-Mason was born in December 1846, and was educated at Charterhouse and Oxford. He early evinced an inclination towards Natural Science, being at first specially interested in Geology, and even before his twenty-third year he had published several palæontological papers in the *Proceedings* and in the *Quarterly Journal* of the Geological Society. In 1869 he came out to India as Assistant Curator of the Indian Museum, for which post he had been selected by Professor Huxley and Sir Joseph Hooker, and in 1870 he became a member of this Society.

His interest in Natural Science was shown immediately he joined the Society, when he contributed his first paper—‘On Polydactylism in a Horse’—to the *Proceedings*, and was sustained throughout the whole twenty-two years of his membership, during the greater part of which period—until he began to be incapacitated by serious organic disease—he was a constant contributor to the *Proceedings* and *Journal*. His papers in the Society’s publications exhibit the comprehensive extent of his attainments, embodying as they do the results of original investigation in most branches of Zoology and in Ethnology in its morphological and geological aspects. His most numerous and most important contributions however were upon Insects,—especially the Mantidæ and Phasmidæ—and upon the general subject of the Crustacea, which early attracted him. In 1873 he became Natural History Secretary, and during the greater part of the next sixteen years, though not continuously, he edited Part II of the Society’s *Journal* with conspicuous ability and success. In 1887 he was elected a Vice-President of the Society. Outside the limits of the Society his devotion to Zoology was marked with no less distinguished ability and success, and in the course of his

official career he became Deputy Superintendent of the Indian Museum, Professor of Zoology and Comparative Anatomy in the Medical College, and finally, on the retirement of Dr. Anderson in 1887, Superintendent of the Museum. In 1888 he was made a Fellow of the University of Calcutta.

His record of work, outside his official routine, and beyond his connexion with the Society, is a long and varied one, and embraces explorations in the field, the publication of his scientific researches, and economic inquiries. Although his purely scientific work completely overshadows his economic work, yet his attitude to economics in the proper place was not unfriendly. With the more aggressive economists he had little sympathy, believing that science diligently and methodically pursued for its own sake would be far more likely to yield incidental benefits to civilization than would science studied disconnectedly for the sake of the practical man alone. In the field he explored, in 1872, the marine fauna of the Andamans, and again, in 1873, that of the Nicobars, and in 1888 he went for a time as Naturalist on board Her Majesty's Indian Marine Survey Steamer 'Investigator.' As a result of these field excursions he added largely to our knowledge of the life of the Bay of Bengal, and greatly enriched the collections in the Indian Museum. He also, in the course of economic inquiries into the Tea-bug, and into the Diseases of Silkworms, travelled and collected largely in Assam, Cachar and Lower Bengal.

He contributed a few papers to the Royal Zoological, and Entomological Societies, and a great many to the *Annals and Magazine of Natural History*, which embodied his original work not only in the field of systematic and descriptive zoology, but upon morphology—especially the morphology of Arthropoda; upon phylogeny—especially the phylogeny of Insecta; upon physiology, and upon the philosophy of zoology. It was in this last branch of the science that his inquiring, original genius found its happiest exercise, and he was particularly interested in all problems as to the significance of animal organs. More than most systematic zoologists was he dissatisfied with the dry facts of animal structure, and his desire to see through these facts into their origin and meaning—to make zoology really a science of living beings—may be said to have been a passion with him. Unfortunately his published work in this direction does not represent a fraction of his accumulated knowledge, principally because he had an almost fastidious objection to publishing anything that was not exhaustively complete. But this philosophical bent of his mind is amply illustrated by his papers on the *claspers*, and on the *antennæ*, and on the *femoral brushes* of the Mantidæ; on the mode in which the young of Astacidæ

attach themselves to the mother; on the *stridulating organs* of Crustacea, of Arachnida, and of Myriapoda; on sexual characters in Molusca; on Mimicry; on the *scent-glands* of Scorpion-spiders; on the meaning of Viviparity; etc. In purely systematic zoology his principal published works were:—(1) *A Catalogue of the Mantodea* which was not completed at the time of his death, and (2) A series of papers on the Butterflies of the Andamans and Nicobars and of Cachar, written in collaboration with Mr. de Nicéville. These papers were the result of work undertaken between the years 1880–83, when Mr. de Nicéville was employed on the staff of the Museum, during which period he worked with that gentleman almost exclusively at the *Lepidoptera* of the Indian region, the result being to greatly increase the collections in the Indian Museum and to add largely to faunistic knowledge. In this series of papers must specially be mentioned a very curious case of mimicry between two distinct groups of Papilios, which he discovered. Another systematic work of considerable importance was his series of descriptions and illustrations of the Deep-Sea Crustacea dredged by the ‘Investigator.’ He also had in contemplation a complete catalogue of the Crustacea for which, however, he had only collected and systematized the bibliography.

His principal economic work consisted of Reports on the Tea-mite and other Insect-pests, and on certain diseases of Silkworms. He also formed for the Indo-Colonial Exhibition a collection illustrative of Indian sericulture, for which he received the thanks of Government.

His influence as a Naturalist extended far beyond the Museum and the realm of scientific literature: to beginners he was always ready to give advice and assistance at any sacrifice to himself; he had no contempt for amateurs, and no jealousy of fellow-workers: but he had truly and singly at heart the advancement of science, as is amply shown by his work upon the ‘Investigator’ Zoological Reports, and by his work in connexion with the establishment of the Calcutta Microscopical Society—a Society mainly of amateurs.

His health seems never to have been really robust, and recent events show that he must for many years have been suffering from one of the most debilitating and enervating of all organic diseases. But it was not until quite the end of last year that the outward signs of it became so manifest as to arouse the anxiety of his friends.

He was in a critical state of health when he left Calcutta on the 5th of April, and he died on the 5th of May, just as he was nearing the shores of his native country. Although of late years, owing to his prolonged absence from England, he had no very active connexion with any of the learned societies there, yet he was a fellow of the Zoological

and Entomological Societies of London and of the Zoological-Botanical Society of Vienna.

The HONORARY SECRETARY read an obituary notice of the death of Professor Westwood prepared by Mr. E. C. Cotes:—

By the death at a very advanced age of Professor J. O. Westwood the Asiatic Society of Bengal has lost an Honorary Member who was the most distinguished systematic Entomologist of his day. Besides being Hope Professor of Zoology in the University of Oxford, and a Gold Medallist of the Royal Society, Professor Westwood was appointed in 1883, as a special distinction, to be Honorary Life President of the Entomological Society of London; while scientific bodies in many parts of the world have vied with each other in conferring honorary membership upon him.

Professor Westwood's writings include papers upon almost every branch of the Arthropoda. Hagen, in his *Bibliotheca entomologica*, enumerates no less than three hundred and seventy-nine entomological papers which bear his name and which are all more or less valuable, but his greatest achievement is probably the general Manual of Entomology which he published under the unpretending title of "*An Introduction to the Modern Classification of Insects.*" At the time when it was written this work was far in advance of any treatise of its kind, and though half a century of unprecedented activity in Entomological research has since elapsed, it remains a standard authority which no student of the subject can afford to neglect. Previous to the appearance of Westwood's "*Introduction*," no complete examination had been made of the relative position which the numerous families of insects occupy in the natural series; Westwood made a minute comparative study of the characters upon which the classification was based, and after a number of years of patient research, produced a work which at once placed the science of systematic Entomology upon a far sounder basis than it had previously occupied.

As a man he was unpretending in the extreme and was almost entirely wrapped up in his scientific pursuits. His outspoken criticism of everything he disapproved made him a few enemies, but no one who knew him intimately could avoid liking the transparent sincerity and kindness of his rugged nature, however much they might differ from him in opinion.

THE PHILOLOGICAL SECRETARY read reports on the following finds of Treasure Trove Coins:—

Report on 148 old coins forwarded by the Deputy Commissioner, Hissar, with his No. $\frac{32}{G}$, dated 7th January, 1893.

1, The coins are stated to have been found in Masudpur, Tahsil Hansi, District Hissar, under circumstances not further specified. The list, transmitted with the coins, stated them to consist of coins of Muhammad Shah 58, Ghiyāsu-d-din Tughlaq Shāh 55, Fīroz Shah 4, Abu Zafar Muhammad Shah 12, Muhammad Tughlaq Shāh 1, Mubārak Shāh 4, Kutubu-d-dīn 5, Balban Shāh 5, not known 2, Jalālu-d-dīn 1; total 148. On examination, however, this list of identifications turned out to be incorrect. The following is a correct statement of details:—

The coins belong to the following, so-called Paṭhān, Sultans, of Delhi; viz.—

- | | |
|--|-----------|
| I, GHIYĀSU-D-DIN BALBAN 664–686 A. H. = 1265–1287 A. D., | • |
| type as in Br. Mus. Cat., Nos. 115–118 and Chron. No. 113, indifferent specimens, of mixed metal: | • 5 |
| II, JALĀLU-D-DIN FIRŪZ SHĀH, 689–695 A. H. = 1290–1295 A. D., | |
| 1, type as in Br. Mus. Cat., Nos. 146–148, and Chron. No. 122, two fair and two indifferent specimens; of mixed metal: | ... 4 |
| 2, type as in Br. Mus. Cat., Nos. 149–150, Chron. No. 123, one fair and one indifferent specimen; of copper, | ... 2 6 |
| III, 'ALĀU-DIN MUḤAMMAD SHĀH, 695–715 A. H. = 1295–1315 A. D., | |
| 1, type as in Br. Mus. Cat., Nos. 195–201, Chron. 135, dates 706 ¹ , 712 ³ , 713 ³ , 714 ² , 765 ¹ , all of mixed metal:— | ... 10 |
| 2, type as in Br. Mus. Cat., Nos. 182–194, Chron. 136, traces of date only legible on 14 coins, viz., 697 ¹ , 700 ³ , 702 ² , 704 ³ , 707 ¹ , 709 ² , 710 ¹ , 711 ¹ ; 44 illegible, all of copper: total | ... 58 68 |
| IV, QUTBU-D-DIN MUBĀRĀK SHĀH, 716–720 A. H. = 1316–1320 A. D., | |
| 1. type as in Br. Mus. Cat., No. 214, Chron. No. 147, date 716 ³ , | ... 3 |
| 2. type as in Br. Mus. Cat., No. 225–226, Chron. No. 151, date 719 ² . | ... 2 |

3, type as in Br. Mus. Cat., No. 215-216, Chron.			
No. 148, date 717 ¹,	...	...	1
4, type as in Br. Mus. Cat., No. 217-220, Chron.			
No. 149, date 719 ²,	...	...	2
5, type as in Br. Mus. Cat., No. 223-224, not in			
Chron., no date,	...	...	1
6, type as in Br. Mus. Cat., No. 221-222, Chron.			
No. 150, date 717 ¹	...	...	1 10

N.B. All these coins are of mixed metal (silver and copper), except No. 2 which is of silver.

V, GHIYASU-D-DIN TUGHLAQ SHAH 720-725 A. H. = 1320-1324 A. D.,

type as in Br. M. Cat., Nos. 249 ff., Chron. 164,	
dates: 720 ¹ , 721 ⁵ , 722 ¹⁰ , 728 ⁹ , 724 ¹⁰ , 725 ² , 726 ⁵ ,	
727 ⁸ ; illegible 12; all of mixed metal: total...	57

N.B. The coins with the dates 726 and 727 are posthumous. Those of date 227 have not been found hitherto, so far as I know.

VI, MUHAMMAD BIN TUGHLAQ, 725-752 A. H. = 1324-1351 A. D.

1, type as in Br. Mus. Cat., No. 280, Chron. No.		
189, date 726 ¹ , of silver	...	...
2, type as in Chron. No. 203 ^(?) , of copper	...	2
Total:—	...	148

Report on 20 old coins forwarded by the Collector of Cuttack with his letters, No. 552 G, dated $\frac{28}{30}$ March, 1893, and No. 744 G., dated 22 April, 1893.

The coins are stated to have been found in the Jajpur sub-division by some people digging the ground. It is not known how many coins were found, but thirty-two were recovered by the police from the finders; viz., 2 gold, and 30 silver coins. The two gold coins, and 15 of the silver coins, were at first forwarded to me by the Collector, but, on my request, the remainder (all silver) were sent for examination afterwards. Of the latter, I retained four coins on account of their numismatic value; on the other hand, I returned to the Collector one silver coin of the first-sent lot, as being of no numismatic value; I also returned to him eleven coins of the second lot. Altogether twelve coins were returned to the

Collector, and twenty coins (*viz.*, 2 gold and 18 silver,) were retained, to be dealt with under the *Treasure-trove Act*.

Of these 20 coins, one gold coin is a Venetian ducat, of Aloys. Pisani, the remainder are coins of the following Moghul emperors of Dehli: Aurangzib, 'Alamgir Śāni, Shāh Jahān III., and Shāh 'Ālam. The following is a detailed statement:—

I. AURANGZIB, 1069–1118, A. H. = 1659–1707, A. D.			
Type: ordinary, lettered surfaces, date 1118, 51,			
mint Dāru-l- <u>khilāfat</u> Shāhjahānābād; a gold			
mohur			1
*II. 'ĀLAMGIR ŚĀNI, 1167–1173, A. H. = 1754–1759,			
A. D.			
Type: lettered surfaces, but date in middle of top-			
line, below name; a rupee			1
III. SHĀH JAHĀN III, 1173–74, A. H. = 1159, A. D.			
(Reigned only a few months.)			
Type: lettered surfaces, with name on top-line,			
date lost on all, except one; mint lost in all,			
but one, which has traces of Murshidābād;			
regnal year <i>ahad</i> (one) on all			10
IV. SHĀH 'ĀLAM 1173–1202, A. H. = 1759–1788, A. D.			
1. Of French and English mintage, Arkat, like			
B. M. Cat., Nos. 123, 148, dates 1173, 1 ² ; 1183, 9;			
1187, 12 ² Total:			5
2. Of English mintage, Murshidābād, like Br. M.			
Cat., Nos. 14–16, dates 1185, 12 and 1186, 12,			
with crescent mark			2 7
Total ...			19

Report on 183 ancient copper coins forwarded by Mr. J. Higgins, D. S. Police, Chanda, with his letters, dated 20th November 1888, 20th January 1889, 22nd January 1889, and 10th July 1889.

The coins are stated to have been found in October 1888, in a field, in a village in the Bramapuri Tahsil, of the Chanda District, in the Central Provinces.

They are all of copper, and show on the obverse the figure of an elephant standing to the right, and carrying on his shoulders the figure of a *mahaut*; above him there is a legend, in ancient Nāgarī characters, giving the name of the king that issued the coin. The reverse bears the well-known symbol of Ujain, i. e., four balls, or circles, joined by lines crosswise. They are coins of the Andhra, or Andhrabhṛitya

dynasty, ruling on the south and north of the Narbada river. Their history and coinage is described by General Sir Alexander Cunningham, in his *Coins of Ancient India*, p. 102-111. Mr. Thomas has also described their coins in the *Indian Antiquary*, Vol. VI, p. 276, and Vol. ~~IX~~, p. 61. The exact period of their rule is still unsettled: Sir Alex. Cunningham places it from A. D., 78-186. The coins of the present find belong to the following members of the dynasty: 1, Siri Sātakaṇi Gotamīputra I, 78-99, A. D. 2, Siri Puṣumāvi Vāsīthī-putra (also called Puṣumayi, or Puṣumayi), 99-127, A. D.; 3, Siriyāṇa Sātakaṇi Gotamīputra II, 141-170, A. D.

The following is a detailed statement of them:—

I. SIRI SĀTAKAṆI GOTAMĪ-PUTRA I. The legend is				
<i>Siri Sātakaṇi</i> , or <i>Sātakaṇisa</i> ; in the latter case,				
apparently, without <i>Siri</i> Total :				51
II. SIRI PUṢUMĀVI VĀSĪTHĪ-PUTRA. Legend: (<i>Si</i>) <i>va</i>				
<i>Siri Puṣumāvisa</i> . The first syllable (<i>si</i>) of <i>Siva</i> is				
uncertain; and on some specimens the name may				
be <i>Puṣumāvisa</i> . The letter <i>ḥ</i> resembles the mo-				
dern form of the letter <i>d</i> Total :				24
III. SIRIYĀṆA SĀTAKAṆI GOTAMĪ-PUTRA II. Legend :				
* <i>ta Siriyāṇa Sātakaṇi</i> . The first letter is illegi-				
ble Total ...				42
IV. There are a few coins with imperfect legends, viz.,				
(a), with <i>ya(gada?) Sāta</i>				1
(b), with <i>Siri Kaṇu Sāta</i> , and <i>ri Kaṇu Sāta</i> ...				2
(c), with <i>rajño Va</i> , and <i>jñō Va</i>				2
(d), with <i>ratasa</i> , in the unusual place, in front of				
the elephant				1 6
V. Besides, there are 60 coins, or parts of coins, on				
which the legend is lost, though the elephant and				
the Ujjain symbol is often fairly preserved ...				60
Total : ...				183

N. B.—Though the two letters *va* and *ta*, on the coins, Nos. II and III, seem fairly distinct, it is not improbable that the word to be supplied is *rajño*. There is no trace of any inscription in front or below the elephant.

Report on 97 old coins forwarded by the Deputy Commissioner of Hissar, with his No. ⁵⁹⁴_g, dated the 6th April, 1893.

The coins are stated to have been found at Badlada village, in the Hissar district. They consist of 3 silver (1 broken), and 94 copper coins. There were also 5 broken bits of copper.

They are coins of the following so-called Paṭhān Sultāns of Delhi: Jalālu-d-dīn Fīrūz Shāh II (689–695 A. H. = 1290–1295 A. D.), 'Alāu-d-dīn Muḥammad Shāh (695–715, A. H. = 1295–1315, A. D.), Shihābu-d-dīn 'Umar Shāh (715–716 A. H. = 1315–1316 A. D.), Quṭbu-d-dīn Mubārak Shāh (716–720 A. H. = 1316–1320 A. D.), Nāsiru-d-dīn Khusrū Shāh (720 A. H. = 1320 A. D.); all these of the Khaljī dynasty. Also Ghiyāsu-d-dīn Tughlaq Shāh (720–725 A. H. = 1320–1324 A. D.), and Muḥammad II, bin Tughlaq (725–752 A. H. = 1324–1351 A. D.); both of the Tughlaq dynasty. The whole find, thus, covers a period of 61 years, from 1290–1351 A. D.

The following is a detailed statement :—

I. JALĀLU-D-DĪN FĪRŪZ SHĀH. Type: like B. M. Cat.,			
No. 146, and Chronicles No. 133; copper	...		1
II. 'ALĀU-D-DĪN MUḤAMMAD SHĀH,			
1. Silver. Type: like B. M. Cat., No. 164. Mints			
and dates lost	...	...	3
2. Copper. Type: like B. M. Cat., No. 195, dates			
701 ² , 702 ⁴ , 703 ³ , 711 ¹ , 712 ² , 713 ⁶ , 714 ² , 715 ¹	...		21 24
III. SHIHĀBU-D-DĪN 'UMAR SHĀH. Copper. Type: like			
Br. Mus. Cat., No. 205, date [7]15	...		1
IV. QUṬBU-D-DĪN MUBĀRAK SHĀH. 1. Copper, square,			
like Br. Mus., Cat., No. 225, date 719	...		1
2. Copper, round, like Br. Mus. Cat., No. 215, date			
716	...	...	1
3. Copper, round, like B. M. C., No. 214, date 716 ³			3
4. Copper, round, like B. M. C., No. 221, date 717			1 6
V. NĀSIRU-D-DĪN KHUSRŪ SHĀH. Copper, like B. M. C.,			
No. 236, date [7]20	...	...	1
VI. GHĪYĀSU-D-DĪN TUḠHLAQ SHĀH,			
1. Copper, like B. M. C., No. 249–251, dates 721 ⁶ ,			
722 ¹⁰ , 723 ⁶ , 724 ⁵ , 725 ² , 727 ¹ , 4 illegible	...		34
2. Copper, like B. M. C., No. 257, date on margin			
of one, 720; others illegible	...	...	13 47

VII. MUHAMMAD BIN TUGHLAQ,

- | | |
|---|------|
| 1. Copper, like B. M. C., No. 281, dates 726 ³ , 727 ⁶ ,
728 ¹ | 15 |
| 2. Copper, like B. M. C., No. 278, date 725 ... | 1 |
| 3. Copper, like B. M. C., No. 284, date 736 ... | 1 17 |

Grand total: ... 97

Mr. G. A. Grierson read an obituary notice of the death of Mr. F. S. Growse:—

The Council regret to have to report the death on the 19th of last May of Mr. Frederick Salmon Growse C. I. E., M. A., at the age of 56, who was for thirty years a member of this Society. Mr. Growse was born in the year 1836 and was educated at Oriel and Queen's Colleges, Oxford, where he was a scholar of his College, and took the degree of M. A. He entered the Bengal Civil Service in 1860, was elected a member of this Society in the year 1861, and commenced contributing to the *Journal* and *Proceedings* some six years afterwards. His first paper, "*On the Transliteration of Indian Alphabets in the Roman Character*," appeared in the *Journal* for the year 1867. For some years he principally devoted himself to assisting in the task then lately undertaken by the Society of producing a correct edition of the Prithirāj Rāysā of Chānd Bardāi, his last paper on this subject appearing in the year 1878. In the course of his researches, he became involved in a controversy with Mr. John Beames, as to the principles on which a scientific edition and translation of the poem should be prepared. The arguments of both scholars will be found duly recorded in the *Journal*, but are now of little more than academical value, as it is has since been ascertained that the poem is a modern forgery.

In the meantime the exigencies of the public service had taken Mr. Growse to Mathurā, with which district his name is indissolubly connected. The *Journal* of the Society and the *Indian Antiquary* contain numerous papers on the holy land of Kṛishṇa-worshippers, full of most valuable information about the country and its people, their beliefs and religious customs. These papers were subsequently collected in one of his more important works, "*Mathurā: a District Memoir*." Mr. Growse was transferred to Bulandshahr in 1878, where he remained for some six years, being then transferred to Fatehpur where he finished his career of Indian service in the year 1891. On both of these districts he wrote admirable monographs, viz:—"Bulandshahr: or Sketches of an Indian District, Social, Historical, and Architectural," and "*A Supplement to the 'Fatehpur Gazetteer'*."

During his residence at Mathurá Mr. Growse became an earnest student of Indian Architecture, and on his transfer to Bulandshahr he was enabled to put the lessons which he had learned into practice. He found Bulandshahr a mean little place, and left it in 1884, the most architectural modern town of its size in the North-Western Provinces. The improvements effected are recorded in a beautifully illustrated work published in 1886, entitled "*Indian Architecture of To-day, as exemplified in New Buildings in the Bulandshahr District.*"

In the year 1876, there appeared in the *Journal* of the Society from Mr. Growse's pen, an article entitled, "*The Prologue to the Rámáyana of Tulsi Dás: a Specimen Translation.*" This was the first public intimation of the task to which Mr. Growse had lately applied himself—the translation of the famous epic of the great poet of Oudh. It is on this translation that Mr. Growse's fame will rest in this country. It has made his name known wherever the worship of Ráma prevails, and his translation, the first volume of which was issued in 1880, is eagerly sought for and bought by English-knowing natives throughout North-Western India. The work has been frequently re-printed, and the elegance of its style and the general accuracy which distinguishes it have been frequently publicly recognised by the best critics. To European students of the Hindí language the work has been invaluable, and it has materially assisted later labourers in their researches in the same field.

When Mr. Growse retired from Government Service in 1891, his friends hoped that his newly-found leisure would enable him to continue those studies by which he had rendered his name conspicuous, and by which he had added lustre to the Society of which he was so long a member. In losing him, the world of Oriental literature has lost a fellow-labourer whose work, in its own peculiar sphere, was conscientious and thorough, and at the same time frequently graced by an eminently artistic style.

The SECRETARY read a circular from the Royal Society of New South Wales, enumerating prizes to be given for original researches on certain subjects connected with Australia. This can be seen in the Society's Office.

The SECRETARY stated that the Council proposed to discontinue the opening of the library between 7 to 9 A. M. The Assistant Librarian to attend the library from 10-30 A. M. to 5-30 P. M.

Mr. C. Little moved and Dr. A. W. Alcock seconded, that the question be postponed and that it be referred to the Council for reconsideration.

The SECRETARY read a circular from the Microscopical Society of Calcutta announcing the dates of their General Meetings to be, 10th July, 14th August and 11th September 1893.

• Mr. L. de Nicéville exhibited two boxes of butterflies collected by Mr. W. Doherty in New Guinea, also a pair of Pollinia of an Orchid removed from the eyes of one of the butterflies and mounted as a microscopic slide, and made some remarks on them:—

“I pass round for the inspection of the members present this evening two boxes of butterflies collected in New Guinea by that intrepid traveller and naturalist, Mr. William Doherty, of Cincinnati, United States of America, who has devoted the last fifteen years of his life to collecting natural history objects in the East, more especially insects, and has in the course of his travels visited nearly every island in the Malay Archipelago, from Sumatra on the west to New Guinea on the east. The first box contains specimens from Humboldt's Bay, on the north of New Guinea at about the 141st E meridian; the second box specimens from Andai, N.-W. New Guinea. Comparatively few collections have been made on the north coast of this great island, so the specimens may perhaps be of interest to some of the members present.

I also pass round a microscopic slide which contains two pollinia which I removed, one from the middle of the convex surface of each eye of one of the butterflies (*Papilio pandion*, Wallace) now exhibited from Andai. The butterfly is a male and must, one would think, have suffered considerable inconvenience from the presence of these pollinia attached to his eyes. As you will see, they are nearly half an inch in length (11 mms.), and consist of an oval disc by which they attach themselves firmly to any object which may touch them, the disc being covered with a viscid matter which dries in a very little while (Darwin says, in a few minutes); a lengthened straight stem called a caudicle; and the brush-like head which is composed of the pollen-grains proper. Considerable force was required to remove each pollinium, and from the fact of their being so firmly attached I very much doubt if any butterfly could unaided get rid of them. Each pollinium projected forwards from the eye in a line with the axis of the body of the insect, the two pollinia being placed symmetrically. I shewed the slide to Dr. David Prain of the Royal Botanic Garden, Shillpur, but all he could tell me about it is that the pollinia belonged to some Orchid, but he would not even guess as to the genus of the plant. A vast mass of most interesting information on the subject generally will be found in Mr. Charles Darwin's work, “The various Contrivances by which Orchids are Fertilised by Insects,” to which book

I may refer any one especially interested in the subject. The book, however, is not in the Library of the Asiatic Society, and I have to thank Dr. King for the loan of a copy from Shibpur. I may add, in conclusion, that I have probably set out with my own hands 30,000 or 40,000 butterflies, but this New Guinea *Papilio* is the only one that I have found with the pollinia of an Orchid attached to it."

The following papers were read :—

1. *On some newly-recorded Corals from the Indian Seas*,—By A. W. ALCOCK, ESQ., M.B., C.M.Z.S., *Officiating Superintendent of the Indian Museum*. •

The paper will be published in the *Journal*, Part II.

2. *A brief account of Bhāskara, and of the works written and the discoveries made by him*,—By the late BAPÚ DEVA SĀSTRĪ. *Communicated by the PHILOLOGICAL SECRETARY*. •

The paper will be published in the *Journal*, Part I.

3. *Materials for a Flora of the Malayan Peninsula (No. 5)*,—By GEORGE KING, ESQ., M.B., LL.D., F.R.S., C.I.E., *Superintendent of the Royal Botanic Garden, Calcutta*.

The paper will be published in the *Journal*, Part II.

LIBRARY.

The following additions have been made to the Library since the meeting held in May last :—

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

Presented by the respective Societies and Editors.

- Bombay. Bombay Natural History Society,—Journal, Vol. VII, No. 4.
- . The Indian Antiquary,—Vol. XXII, Parts 262–64.
- Calcutta. Asiatic Society of Bengal,—Proceedings, Nos. 2–5, 1893
- . ———. Journal, Part I, No. 1, 1893.
- . ———. ———. Part II, No. 1, 1893.
- . ———. ———. Part III, No. 1, 1893.
- . Indian Engineering,—Vol. XIII, Nos. 18–22.
- . Maha-Bodhi Society,—Journal, Vol. II, No. 1.
- . Photographic Society of India,—Journal, Vol. VI, No. 5.

Chicago, Ill. The American Antiquarian and Oriental Journal,—Vol. XV, No. 2.

Colombo. Ceylon Branch of the Royal Asiatic Society,—Journal, Vol. XII.

• Florence. La Società Africana d' Italia,—Bullettino, Tome VIII, Fasc 6-8.

———. La Società Italiana di Anthropologia, Etnologia e Psicologia Comparata,—Archivio per l' Antropologia e la Etnologia, Tome XXII, Fasc. 3.

Hague. Koninklijk Instituut voor de Taal-, Land- en Volkenkunde van Nederlandsch-Indië,—Bijdragen tot de Taal- Land- en Volkenkunde van Nederlandsch Indië, Deel VIII, Aflevering 2.

Havre. Société de Géographie Commerciale du Havre,—Bulletin, Mars—Avril, 1893.

Leipzig. Der Deutschen Morgenländischen Gesellschaft,—Abhandlungen für die Kunde des Morgenlandes, Band IX, No. 4.

———. Der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig,—Berichte, Phil-Hist Classe, III, 1892.

London. The Academy,—Nos. 1094-98.

———. The Athenæum,—Nos. 3417-21.

———. Geological Society,—Quarterly Journal, Vol. XLIX, Part. 2.

———. Institution of Electrical Engineers,—Journal, Vol. XXII, No. 105.

———. Nature,—Vol. XLVII, Nos. 1206, 1225-29.

———. Royal Asiatic Society of Great Britain and Ireland,—Journal, Part II, 1893.

———. Royal Astronomical Society,—Monthly Notices, Vol. LIII, No. 6.

———. Royal Geographical Society,—Geographical Journal, Vol. I, No. 5.

———. Zoological Society of London,—Proceedings, Part IV, 1892.

———. ———. Transactions, Vol. XIII, Part 5.

Manchester. Manchester Literary and Philosophical Society,—Memoirs and Proceedings, Vol. VII, No. 1.

Moscow. La Société Impériale des Naturalistes de Moscou,—Bulletin, No. 4, 1892.

Mussoorie. The Indian Forester,—Vol. XIX, No. 5.

New Haven. American Oriental Society,—Journal, Vol. XV, No. 3.

———. Connecticut Academy of Arts and Sciences,—Transactions, Vol. VIII, Part 2; IX, 1.

Paris. Société de Géographie,—Comptes Rendus des Séances, Nos. 8 et 9, 1893.

- Rome. La Società Degli Spettroscopisti Italiani,—Memorie, Tome XXII, No. 4.
- Santiago. La Société Scientifique du Chili,—Actes, Tome II, No. 3.
- St. Petersburg. Horti Petropolitani,—Acta, Tomus XII, Fasc. 2.
- . Russian Imperial Geographical Society,—Proceedings, Vol. XXVIII, No. 6; XXIX, 2.
- Der Russisch-Kaiserlichen Mineralogischen Gesellschaft zu St. Peterburg,—Verhandlungen, Band XXIX.
- Sydney. Linnean Society of New South Wales,—Proceedings, Vol. VII, Part 4.
- Taiping. Perak Government,—Gazette, Vol. VI, Nos. 11 and 12.
- Tōkyō. Imperial University of Japan,—Journal of the College of Science, Vol. VI, Part 1.
- Trieste. La Società Adriatica di Scienze Naturali in Trieste,—Bollettino, Tome XIV.
- Turin. La R. Accademia della Scienze di Torino,—Atti, Tome XXV, II, Nos. 4–8.
- Vionna. Der K. K. Geologischen Reichsanstalt,—Verhandlungen, Nrn. 2–5, 1893.
- Wellington. Polynesian Society,—Journal, Vol. II, No. 1.
- Zürich. Der Naturforschenden Gesellschaft in Zurich,—Vierteljahrsschrift, Band XXXVII, Nrn. 3 und 4.

BOOKS AND PAMPHLETS,

Presented by the Authors, Translators, &c.

- BYSACK, GAUR DAS. Some Neglected Indian Records. 8vo.
- RĀY, PRATĀPA CHANDRA. The Mahabharata, translated into English Prose, Part LXXIX. 8vo. Calcutta, 1893.
- SĀSTRĪ, PANDIT HRISHI KRĒṢĀ. The Sanskrit Critical Journal for February and March, 1893. 8vo., Calcutta, 1893.
- SYOBODA, DR. W. Die Bewöhrner des Nicobaren-Archipels, nach eigenen Beobachtungen, älteren und neueren quellen (Separat-Abdruck aus "Internationales Archiv für Ethnographie," Bd. V und VI). 4to. Leyden, 1893.

MISCELLANEOUS PRESENTATIONS.

- Resolution on the Revenue Administration of the Central Provinces for the year 1891–92. Fcp. Nagpur, 1893.
- Triennial Report on the working of the Government Charitable Dispensaries in the Central Provinces for the year 1892. Fcp. Nagpur, 1893.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

Catalogue de la Bibliothèque de feu Ahmed Vefyk Pacha. 4to. Constantinople, 1893.

CURATEUR DE LA SUCCESSION DE FEU AHMED VEFYK PACHA.

SHELTON, E. M. The Cultivation of Wheat in Queensland (Bulletin, Department of Agriculture, Brisbane, No. 22). 8vo. Brisbane, 1893.

DEPARTMENT OF AGRICULTURE, BRISBANE.

Report of the Secretary of Agriculture of the United States for 1891. 8vo. Washington, 1892.

DEPARTMENT OF AGRICULTURE, UNITED STATES.

Annual Report on the Lunatic Asylums of Bengal for the year 1892. Fcp. Calcutta, 1893.

Returns of the Rail and River-borne Trade of Bengal during the quarter ending the 31st December 1892. Fcp. Calcutta, 1893.

GOVERNMENT OF BENGAL.

The Indian Antiquary for March and April 1893. 4to. Bombay, 1893.

GOVERNMENT OF INDIA, HOME DEPARTMENT.

Catalogue of Notices to Mariners, issued during the year 1892. 8vo. 1893.

GOVERNMENT OF INDIA, MARINE DEPARTMENT.

Census of India, 1891. General Tables for British Provinces and Feudatory States, Vol. I. Fcp. London, 1892.

GOVERNMENT OF INDIA, REV. AND AGRI. DEPARTMENT.

Results of Observations of the fixed Stars made with the Meridian Circle at the Government Observatory, Madras, in the years 1877, 1878, and 1879, Vol. VI. 4to. Madras, 1893.

GOVERNMENT OBSERVATORY, MADRAS.

The Indian Journal of Education for May 1893. 8vo. Madras, 1893.

V. KALYANARAM IYER, ESQ.

SERRURIER, L. Prof. Schlegel's Zoogenaamde Kritiek van het Japansch-Nederlandsch en Japansch-Engelsch Woordenboek, Deel III. 8vo. Leyden, 1893.

KÖNINKLIJK INSTITUUT VOOR DE TAAL- LAND- EN VOLKENKUNDE

VAN NEDERLANDSCH-INDIË, HAGUE.

LESKIEN, AUGUST. Untersuchungen über Quantität und Betonung in den Slavischen Sprachen (Des XIII. Bandes der Abhandlungen der Philologisch-Historischen Classe der Königl. Sächsischen Gesellschaft der Wissenschaften, Nr. VI). 4to. Leipzig, 1893.

VOIGT, MORITZ. Ueber die Leges Iuliae Iudiciorum Privatorum und Publicorum (Des XIII. Bandes der Abhandlungen der Philologisch-Historischen Classe der Königl. Sächsischen Gesellschaft der Wissenschaften, Nr. V). 4to. Leipzig, 1893.

DER KÖNIGL. SÄCHSISCHEN GESELLSCHAFT DER WISSENSCHAFTEN,

LEIPZIG.

Monthly Weather Review for December 1892. 4to. Calcutta. 1893.

Original Meteorological Observations of Calcutta, Allahabad, Lucknow, Lahore, Nagpur, Bombay and Madras, for December 1892.

METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA.

GONDA, M BE'LA de. La Régularisation des Portes de Fer et des autres Cataractes du bas Danube (Vème Congrès International de Navigation Intérieure, Paris, 1892). 8vo. Paris, 1892.

LA SOCIÉTÉ DE GÉOGRAPHIE HONGROISE À BUDAPEST.

General Report on the Operations of the Survey of India Department during 1891-92. Fcp. Calcutta, 1893.

SURVEYOR GENERAL OF INDIA.

Report of the President of Yale University for the year ending December 31st, 1892. 8vo. New Haven, 1893.

YALE UNIVERSITY

PERIODICALS PURCHASED.

Allahabad. North Indian Notes and Queries,—Vol. III, No. 2.

Calcutta. Indian Medical Gazette,—Vol. XXVIII, No. 5.

Geneva. Archives des Sciences Physiques et Naturelles,—Tome XXIX, No. 1.

Leipzig. Annalen der Physik und Chemie,—Band XLVIII, Heft 4; XLIX, 1.

———. ————. Beiblätter, Band XVII, Stück 4.

London. The Chemical News,—Vol. LXVII, Nos. 1743-47.

———. Numismatic Circular,—No. 6, 1893.

Paris. Revue Scientifique,—Tome LI, Nos. 16-20.

PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL
FOR JULY, 1893.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 5th July, 1893, at 9-15. P.M.

L. DE NICEVILLE, Esq., F.E.S., in the Chair.

The following members were present :—

Dr. A. W. Alcock, G. A. Grierson, Esq., A. Hogg, Esq., T. H. Holland, Esq., Dr. W. King, C. Little, Esq., Kumar Rameswar Maliah, C. R. Marriot, Esq., R. D. Oldham, Esq., Dr. J. H. Tull Walsh, C. R. Wilson, Esq.

Visitors :—Dr. R. Anderson, W. J. Simmons, Esq

The minutes of the last meeting were read and confirmed.

Forty-two presentations were announced, details of which are given in the Library List appended.

The following gentlemen, duly proposed and seconded at the last meeting of the Society, were ballotted for and elected Ordinary Members :—

Bábu Radhikáraman Chatterji.

C. D. Mangos, Esq.

Pandit Beni Madho Tribedi.

The following gentlemen are candidates for election at the next meeting :—

Edward O'Brien, Esq., C.S., Deputy Commissioner of Kangra, proposed by M. L. Dames, Esq., seconded by Dr. A. W. Alcock.

Bábu Sures Chandra Samajpati, Editor, "*Sáhitya*," proposed by Bábu Rajanikánta Gupta, seconded by Pandit Hara Prasad Sastri.

The following gentleman has expressed a wish to withdraw from the Society :—

Bábu Hari Charan Basu.

The Chairman reported that Dr. A. F. R. Hoernle had accepted the office of Vice-President, and Mr. C. Little a seat on the Council of the Society.

The Chairman also reported that the Budget drawn up by the Philological Committee, shewing the expenses on the "Bibliotheca Indica," together with a list shewing the order in which the manuscripts should be edited, had been accepted by the Council, with a request that a similar Budget be drawn up in December every year.

PROCEEDINGS OF A MEETING OF THE PHILOLOGICAL COMMITTEE OF THE ASIATIC SOCIETY OF BENGAL.

Held on Thursday, June 8th, 1893.

PRESENT :

G. A. Grierson, Esq., Hon. Phil. Secy. Babu Pratápa Chandra Ghosha.
Paṇḍit Hara Prasád Sástrí, ditto. Babu Gaur Dás Bysák.

REPORT :

We recommend that, for the present year, 1893, the following Budget for the "Bibliotheca Indica" be adopted, and that none of the items of expenditure be in any way exceeded. We further recommend that for future years a similar Budget be prepared at the commencement of the year by this Committee.

BUDGET for the remaining months of 1893.

RECEIPTS.		RS. A. P.	DISBURSEMENTS.		RS. A. P.
Balance in hand	...	618 0 0	Editing charges due	...	760 0 0
Government grant from May	...		Printing charges due	...	715 0 0
to December	...	6,000 0 0	Tattva Chintámani	...	300 0 0
			Tul'si Sāt'sai	...	300 0 0
			Bṛihad-dharma Puráṇa	...	300 0 0
		6,618 0 0	Svayambhúpuráṇa	...	350 0 0
			Pag Sam Thi S'in	...	450 0 0
			Márkandeya Puráṇa	...	500 0 0
			Ain-i-Akbari	...	1,200 0 0
			Nyáya-vártika	...	300 0 0
			Aṇu-bhāshya	...	300 0 0
Note—			Commentaries on ten Arabic		
			Poems	...	300 0 0
			Kalpalatá	...	450 0 0
			For payment of old debts for incomplete works	...	320 0 0
No account has been taken of the sale-proceeds of books, as they cover the establishment, postage, and other charges.					
					Rs. 6,545 0 0
			Balance		73 0 0
					<hr/> Rs. 6,618 0 0

The following books have been stopped for want of funds or other reasons; we recommend that these should be undertaken on the first opportunity :—

1. Chaturvarga Chintāmaṇi.
2. Sher Phyin.
3. Taittiriya Saṃhitā.
4. Sāṃkhāyana Śrauta Sūtra.
5. Maāsir-ul-Umarā.
6. Nyāya Kusumāñjali.
7. Śrī Bhāshya.
8. Yoginī Tantra.
9. Kātantra.
10. Atharvaṇa Upanishads.
11. Apastamba Śrauta Sūtra.
12. Lalita Vistara (English Translation).
13. Suśruta.

With regard to future publications, we recommend that a list be drawn up, showing, in order of urgency, works which the Society desires to publish in the "Bibliotheca Indica." As new works are proposed to be published, they can be inserted in their proper place in the list.

We append the following list, which we have drawn up in order of urgency, of books which it has been proposed to publish, and recommend that it may be adopted and adhered to. We cannot hope to publish works in the order given in every case, as we cannot find at the same time a competent editor and a sufficiency of manuscripts. When, therefore, it is found impossible to publish an earlier number, the next in the list should be taken up, and so on, till a suitable work is found.

- | | |
|---------------------------------|---|
| 1. Aitareya Brāhmaṇa. | 11. Tāj-ul-Maāsir. |
| 2. Hiranya Keśi Sūtra (Śrauta). | 12. Nuḳd u'l Farazdaq Jarir. |
| 3. Baudhāyana Sūtra (Śrauta). | 13. Karaṇa Grantha. |
| 4. Akbar-nāmah (Translation). | 14. Bhattotpala's Commentary on the Brihat Saṃhitā. |
| 5. Vipāka Sūtra. | 15. Yājñavalkya Gītā. |
| 6. Nātādhamma Kathā Sūtra. | 16. Kathā-kosha. |
| 7. Saddharma Puṇḍarīka. | 17. Kāla-viveka. |
| 8. Muntakhab-ul-Tawārīkh. | 18. Charaka. |
| 9. Tawārīkh i Yamīnī. | |
| 10. Tawārīkh i Wassāf. | |

The Secretary read a circular from the "Smithsonian Institution," Washington, enumerating prizes to be given in connection with the "Hodgkins' Fund." This can be seen in the Society's office.

Mr. C. Little gave notice of the following proposal, which he intends to bring forward at the next meeting of the Society:

"That the meeting hour be changed from 9-15 P.M. to 9-30 P.M."

The following papers were read:—

1. *Note on some methods of preparing botanical specimens, communicating Memoranda* by MESSRS. C. MARIES, F.L.S., and R. PANTLING.—By D. PRAIN, Esq., M.B.

2. *On some Actiniaria from the Indian Seas*.—By A. ALCOCK, Esq., M.B., C.M.Z.S., Superintendent of the Indian Museum.

These papers will be published in the *Journal*, Part II.

LIBRARY.

The following additions have been made to the Library since the meeting held in June last:—

TRANSACTIONS, PROCEEDINGS AND JOURNALS.

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—Circulars, Vol. XII, No. 105.

Berlin. Der Königlich Preussischen Akademie der Wissenschaften zu Berlin,—Sitzungsberichte, XLI–LV.

Bordeaux. L'Académie nationale des Sciences, belles-lettres et Arts de Bordeaux,—Actes, Tome LII, Nos. 1–4; LIII, 1 et 2.

Brussels. La Société Entomologique de Belgique,—Annales, Tome XXXIV et XXXV.

Calcutta. Geological Survey of India,—Records, Vol. XXVI, Part 2.

———. Indian Engineering,—Vol. XIII, Nos. 23–25; XIV, 1.

———. Maha-Bodhi Society,—Journal, Vol. II, No. 2.

———. Photographic Society of India,—Journal, Vol. VI, No. 6.

Chicago, Ill. The American Antiquarian and Oriental Journal,—Vol. XV, No. 3.

Frankfort a/o. Des Naturwissenschaftlichen Vereins des Reg.-Bez. Frankfurt,—Helios, Jahrg X, Nr. 9.

———. Societatum Litterarum, Jahrg VI, Nr. 11 und 12.

Ithaca. Cornell University—Library Bulletin, Vol. III, No. 3.

Leipzig. Der Deutschen Morgenländischen Gesellschaft,—Zeitschrift, Band XLVII, Heft 1.

———. Der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig,—Math.-Phy. classe, Verhandlungen, I, 1893.

London. The Academy,—Nos. 1099–1102.

———. The Athenæum,—Nos. 3422–3425.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XXII, No. 3.

———. Institution of Electrical Engineers,—Journal, Vol. XXII, No. 106.

———. Institution of Mechanical Engineers,—Proceedings, No. 3, 1892.

———. Nature,—Vol. XLVIII, Nos. 1230–1233; and Index to Vol. XLVII.

———. Royal Astronomical Society,—Monthly Notices, Vol. LIII, No. 7.

———. Royal Geographical Society,—Geographical Journal, Vol. I, No. 6.

———. Royal Institution of Great Britain,—Proceedings, Vol. XIII, Part 3.

———. Royal Microscopical Society,—Journal, Part I, 1893.

———. Zoological Society of London,—Proceedings, Part I, 1893.

———. ———, Transactions, Vol. XIII, Part 6.

Lyon. La Société d' Anthropologie de Lyon,—Bulletin, Tome XI.

Mexico. La Sociedad Científica "Antonio Alzate,"—Memorias y Revista, Tome VI, Nos. 7 et 8.

Munich. Der K. b. Akademie der Wissenschaften zu München,—Sitzungsberichte, Math-Phys cl. Heft III, 1891; I-II, 1892.

———. ———. ———. Philos. Philol u hist cl. Heft III-V, 1891; I-II, 1892.

Abhandlungen, Hist classo. Band XX Abth. 1.

Math-Phys cl. Band XVII, Abth. 3.

Philos. Philol cl. Band XIX, Abth. 3.

Mussoorie. The Indian Forester,—Vol. XIX, No. 6.

Nantes. La Société des Sciences Naturelles de L' Ouest de la France,—Bulletin, Tome II, Nos. 3 et 4.

Naples. La Società Africana d' Italia,—Bollettino, Anno XII, Fasc. 3–4.

Paris. La Société d' Anthropologie de Paris,—Bulletins, Tome III, Fasc. 3.

———. Journal Asiatique,—Tome XX, Nos. 2 et 3.

———. Musée Guimet,—Annales, Tome XXII et XXIII.

———. ———. Revue de l' Histoire des Religions, Tome XXV, No. 3; XXVI, 1–3.

———. Du Muséum d' Histoire Naturelle,—Nouvelles Archives, 3^e Série, Tome III et IV.

———. Société de Géographie,—Comptes Rendus des Séances, Nos. 10 et 11, 1893.

- Paris. La Société Zoologique de France,—Bulletin, Tome XVII, No. 8.
 ———. ———. Mémoires, Tome V, No. 5.
- Pisa. La Società Toscana di Scienze Naturali,—Atti, 5 Febbraio—5 Marzo, 1893.
- Rome. La Società Degli Spettroscopisti Italiani,—Memorie, Tome XXII, No. 5.
- St. Petersburg. L' Académie Impériale des Sciences de St. Pétersbourg,—Mémoires, VII^e série, Tome XXXVIII, No. 14; XL, 1.
- Taiping. Perak Government,—Gazette, Vol. VI, Nos. 13-15.
- Vienna. Der Kaiserlichen Akademie der Wissenschaften,—Almanach, 1892.
- . ———. Archiv für österreichische Geschichte, Band LXXVIII, Heft 1.
- . ———. Denkschriften, Phil-Hist cl. Band XLI.
- . ———. Oesterreichische Geschichts-Quellen, Band XLVI, Abth 2; XLVII, 1.
- . ———. Sitzungsberichte, Math-Naturw cl. Abth. I, Band C, Heft 8-10; CI, 1-6; II a, C, 8-10; CI, 1-5; II b, C, 8-10; CI, 1-5, III, C, 8-10; CI, 1-5.
- . ———. ———. Phil-hist., cl. Band CXXVI.
- . Der Anthropologischen Gesellschaft in Wien,—Mittheilungen, Band XXIII, Heft 1.

BOOKS AND PAMPHLETS,

presented by the Authors, Translators, &c.

- GREEVEN, R. The Heroes Five (Panchon Pir), an attempt to collect some of the songs of the "Pachpirya" Ballad-mongers in the Benares Division. 8vo. Allahabad, 1893.
- MAN, EDWARD HORACE. A Dictionary of the Central Nicobarese Language (English-Nicobarese and Nicobarese-English). 8vo. London, 1889.
- RĀY, PRATAPA CHANDRA. The Mahabharata, translated into English Prose. Part LXXX. 8vo. Calcutta, 1893.
- SASTRI, PANDIT HRISHI KESHA. The Sanskrit Critical Journal for May 1893. 8vo. Calcutta, 1893.

MISCELLANEOUS PRESENTATIONS.

- HERTZ, WILHELM. Gedächtnisrede auf Konrad Hofmann. 4to. Munich, 1892.
- REBER, F. v. Kurfürst. Maximilian I. von Bayern als Gemäldesammler. 4to. Munich, 1892.

SEELIGER, HUGO. Ueber allgemeine Probleme der Mechanik des Himmels. 4to. Munich, 1892. 7

WACKELIN, N. Ueber die Stoffe und die Wirkung der griechischen Tragödie. 4to. Munich, 1891.

• DER K. B. AKADEMIE DER WISSENSCHAFTEN ZU MÜNCHEN.

The Thirty-fifth Annual Report of the Trade and Commerce of Chicago, for the year ending December 31st, 1892. 8vo.

BOARD OF TRADE, CHICAGO.

Report of the Sanitary Commissioner of the Central Provinces, for the year 1892. Fcp. Nagpur, 1893.

Report on the Jails of the Central Provinces for the year 1892. Fcp. Nagpur, 1893.

Report on the Judicial Administration (Civil) of the Central Provinces, for the year 1892. Fcp. Nagpur, 1893.

CHIEF COMMISSIONER, CENTRAL PROVINCES.

BASLEY, F. M. A companion for the Queensland Student of Plant life. 8vo. Brisbane, 1893.

DEPARTMENT OF AGRICULTURE, BRISBANE,
Catalogue de la Bibliothèque de feu Ahmed Vefyk Pacha. 4to.
Constantinople, 1893.

DIRECTOR OF PUBLIC INSTRUCTION, BENGAL.

Administration Report on the Jails of Bengal for the year 1892. Fcp. Calcutta, 1893.

Census of India, 1891. Vols. III and IV. The Lower Provinces of Bengal and their Feudatories. Fcp. Calcutta, 1893.

Reports of the Alipore and Hazáribagh Reformatory Schools, for the year 1892. Fcp. Calcutta, 1893.

Report on the Legal Affairs of the Bengal Government, for the year 1892-93. Fcp. Calcutta, 1893.

GOVERNMENT OF BENGAL.

The Indian Antiquary for May and June, 1893. 4to. Bombay, 1893.

North Indian Notes and Queries for April and May 1893. 4to. Allahabad, 1893.

GOVERNMENT OF INDIA, HOME DEPARTMENT.

Guides to Commercial Collections of 1892. No. 1 (Imperial Institute Series). 8vo. Calcutta, 1893.

HOERNLE, DR. A. F. B. The Bower Manuscript: Facsimile leaves, Nagari transcript, Romanised transliteration and English translation with notes. 4to. Calcutta, 1893.

TAW SEIN-KO. A Preliminary Study of the Po-u-daung Inscription of Sinbyuyin, 1774 A.D. (Reprinted from the Indian Antiquary). 4to. Bombay, 1893.

GOVERNMENT OF INDIA, REV. AND AGR. DEPARTMENT.

Hourly Meteorological Observations made at the Madras Observatory,
from January 1856 to February 1861. 4to. Madras, 1893.

GOVERNMENT OF MADRAS.

Gazetteer of the Gurdaspur District, 1891-92. 8vo. Lahore, 1893.

Gazetteer of the Hissar District. 8vo. Lahore, 1893.

GOVERNMENT OF THE PUNJAB.

The Indian Journal of Education for June, 1893. 8vo. Madras, 1893.

V. KALYANARAM IYER, Esq.

STERZEL, J. T. Die Flora des Rothliegenden im Plauenschen Grunde bei
Dresden. (XIX Band der Abhandlungen der Mathematisch physis-
chen-classe der Königl Sächsischen Gesellschaft der Wissenschaften).
4to. Leipzig, 1893.

DER KÖNIGL SÄCHSISCHEN GESELLSCHAFT DER WISSENSCHAFT, LEIPZIG.

Meteorological Observations of Calcutta, Allahabad, Lucknow, Lahore,
Nagpur, Bombay and Madras, corrected and reduced, 1892. Fcp.
Calcutta, 1893.

Monthly Weather Review for January 1893. 4to. Calcutta, 1893.

Original Meteorological Observations of Calcutta, Allahabad, Lucknow,
Lahore, Nagpur, Bombay and Madras, for January 1893. Fcp.
Calcutta, 1893.

METEOROLOGICAL REPORTER TO THE GOVERNMENT OF INDIA.

Results of the Magnetical and Meteorological Observations made at the
Royal Observatory, Greenwich, in the year 1890. 4to. London,
1892.

ROYAL OBSERVATORY, GREENWICH.

Materialien zu Geologie Russlands. 8vo. St. Petersburg, 1893.

DER RUSSISCH. KAISERLICHEN MINERALOGISCHEN GESELLSCHAFT
ZU ST. PETERSBURG.

FISHER A. K. The Hawks and Owls of the United States in their
relation to Agriculture (Bulletin, U. S. Department of Agriculture,
No. 5). 8vo. Washington, 1893.

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON.

Etude sur la Couche de Neige dans le Bassin der Dnièpre en Octobre
1892. 8vo. Kiew, 1892.

Observations faites à l' Observatoire Météorologique de l' Université
de Kiew, Septembre et Octobre, 1892. 8vo. Kiew, 1892.

L' UNIVERSITE' DE KIEW.

Bibliographies of the present officers of Yale University, 1893. 8vo.
New Haven, 1893.

DAVIDSON, CHARLES. Studies in the English Mystery Plays. 8vo. New
Haven, 1892.

YALE UNIVERSITY.

PERIODICALS PURCHASED.

- Allahabad. North Indian Notes and Queries,—Vol. III, No. 3; and Index to Vol. II.
- Berlin. Deutsche Literaturzeitung,—Jahr. XIV, Nrn. 3-11.
- . Orientalische Bibliographie,—Band VI, Heft 4.
- . Zeitschrift für Ethnologie,—Heft V, 1892.
- Calcutta. The Calcutta Review,—Vol. XCVII, No. 193.
- . Indian Medical Gazette,—Vol. XXVIII, No. 6.
- Cassel. Botanisches Centrabbat,—Band LIII, Nrn. 2-11.
- Geneva. Archives des Sciences Physiques et Naturelles,—Tome XXIX, No. 5.
- Göttingen. Königl Gesellschaft der Wissenschaften,—Göttingische gelehrte Anzeigen, Nr. 26, 1892; 2-5, 1893.
- . Nachrichten, Nr. 16, 1892; 1-3, 1893.
- Leipzig. Annalen der Physik und Chemie,—Band XLIX, Heft 2.
- . Beiblatter, Band XVII, Stück 5.
- Leyden. Internationales Archiv für Ethnographie,—Band V, Heft 5 und 6; und Supplement zu Band IV.
- London. The Annals and Magazine of Natural History,—Vol. XI (6th series), Nos. 62 and 63.
- . The Chemical News, Vol. LXVII, Nos. 1748-51.
- . The Entomologists,—Vol. XXVI, Nos. 357 and 358.
- . The Entomologist's Monthly Magazine,—Vol. IV (2nd series), Nos. 38 and 39.
- . The Journal of Botany,—Vol. XXXI, Nos. 362 and 363.
- . The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science,—Vol. XXXV (5th series), Nos. 213 and 214.
- . The Messenger of Mathematics,—Vol. XXII (New Series), No. 9.
- . The Numismatic Chronicle and Journal of the Numismatic Society,—Part IV, 1892.
- . Numismatic Circular,—No. 7, 1893.
- . Quarterly Journal of Microscopical Science,—Vol. XXXIV, Part 3.
- New Haven. The American Journal of Science,—Vol. XLV (3rd series), Nos. 266 and 267.
- Paris. L'Académie des Sciences,—Comptes Rendus des Séances, Tome CXVI, Nos. 3-10.
- . Annales de Chimie et de Physique,—Février et Mars, 1893.
- . Revue Critique d'Histoire et de Littérature,—Tome XXXV (Nouvelle série), Nos. 3-10.

Paris. *Revue Scientifique*,—Tome LI, Nos. 21-24.

Philadelphia. *Manual of Conchology*,—Vol. XIV, No. 3; VIII (2nd series), Part 3.

Vienna. *Vienna Oriental Journal*,—Vol. VI, Nos. 3 and 4; VII, 1.

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Anandas'rama Sanskrita Series, No. 16, Part II. *Brīhadāraṇy-opanishad-vārtika*. By Shrīmat Surés' Vatāchārya. 8vo. Poona, 1893.

CUNNINGHAM, MAJOR-GENERAL SIR A. Mahābodhi, or the Great Buddhist Temple under the Bodhi Tree at Buddha-Gaya. 4to. London, 1892.

MACDONELL, ARIHUR A. A Sanskrit-English Dictionary. 4to. London, 1893.

The Zoological Record for 1890. 8vo. London, 1892.



PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR AUGUST, 1893.

The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 2nd August, 1893, at 9-15 p.m.

DR. A. F. R. HOERNLE, Vice-President, in the Chair.

The following members were present.—

Bábu Nobin Chand Bural, G. A. Grierson, Esq., T. H. Holland, Esq., The Rev. H. B. Hyde, J. Maná, Esq., T. R. Munro, Esq., L. de Nicéville, Esq., Pandit Hara Prasád Sástri, Dr. J. H. Tull Walsh, C. R. Wilson, Esq.

Visitor:—A. W. B. Power, Esq. .

The minutes of the last meeting were read and confirmed.

Sixty-four presentations were announced, details of which are given in the Library List appended.

The following gentlemen, duly proposed and seconded at the last meeting of the Society, were ballotted for and elected Ordinary Members:—

Edward O'Brien, Esq., C.S.

Bábu Suresh Chandra Samajpati.

The following gentlemen are candidates for election at the next meeting:—

Bábu Purmeshwar Narain Mahatha, Zemindar, Mozufferpore, proposed by P. Kennedy, Esq., seconded by C. R. Wilson, Esq.

Surgeon-Captain R. Anderson, I. M. S., proposed by Dr. A. W. Alcock, seconded by Dr. J. H. Tull Walsh.

The following gentlemen have expressed a wish to withdraw from the Society :—

P. J. Carter, Esq.

Colonel T. H. Haldich, R.E.

Lieutenant-Colonel T. M. Jenkins, M.S.C.

The SECRETARY reported the death of Nawáb Bahádur Abdul Latif Khán, C.I.E., an ordinary member of the Society.

Dr. Hoernle read an obituary notice of the death of Nawáb Bahádur Abdul Latif Khán.

“The life of the illustrious Muhammadan leader who has recently passed away, and who also was a member of this Society, deserves a notice in these Proceedings.

“Sprung from a respectable family in East Bengal, Nawáb Bahádur Abdul Latif received his education in the Calcutta Madrasa in which he eventually became Anglo-Arabic Professor. In March 1849, while holding this appointment, he was appointed a Deputy Magistrate in the 24-Pergannahs on a salary of Rs. 200 per mensem. Four years later he was promoted to a higher grade and placed in charge of the Sub-division of Kalaroa in the same district. The following year he was transferred to the Sub-division of Jahánábád. Here he remained for about five years, and his administration was so successful that he was officially thanked by the Magistrate, while the leading Zamindárs of the place presented him with a farewell address, expressing their satisfaction at his administration of the Sub-division and regret at his transfer from it. From Jahánábád, he was transferred to Alipore in the 24-Pergannahs, and in 1867, the newly-created Suburban Police Court of that place was placed under his charge. After ten years of such incumbency, he was appointed to officiate as Presidency Magistrate in Calcutta. In October 1877, he was appointed to the Suburban Police Court at Sealdah and continued in this charge till the 31st December 1884, on which date he retired from the service of Government to enjoy the pension which he had so well earned.

“In 1863 Abdul Latif was appointed a Fellow of the Calcutta University. In 1877 he was created a Khán Bahádur, three years later a Nawáb, and on the 1st January 1883 was decorated with the insignia of the Companionship of the Order of the Indian Empire. There has not been a single national or patriotic movement during the last thirty years in which Nawáb Abdul Latif had not taken a prominent part. But it is as the pioneer of English education amongst the Muhammadans of these Provinces that the late Nawáb Bahádur will be best remembered by posterity. At a time when the Muhammadan gentry of Bengal had obstinately set their faces against English education, and Muhammadan

bigotry was supreme, it was Abdul Latíf who alone had the courage and the foresight to come forward and hold aloft—often in the face of bitter opposition—the standard of English education, and he was thus the pioneer of a movement which has already brought much benefit to his hitherto benighted community, and promises to do still more good for them.

“As a man, the late Nawáb Bahádúr possessed many social and other qualities which made him the respected centre of a large number of friends.”

The PHILOLOGICAL SECRETARY (Numismatic) read reports on the following finds of Treasure Trove Coins:—

(I) Report on an old silver coin forwarded by the Deputy Commissioner of Gujranwála, with his No. 327, dated the 5th June 1893.

The Deputy Commissioner reports that 449 coins were found, of which only the one specimen forwarded for examination has been recovered from the finder. All the remainder have been disposed of by the finder for Rs. 440, for which a fine of Rs. 500 was inflicted on him. The time and place of finding are not specified in the Deputy Commissioner's report.

The single coin, forwarded, is a rupee of the Moghul Emperor, Ahmad Sháh Bahádúr, of the mint *Dáru-s-Sultánat Ldhór* (mutilated.) The date is lost, the regnal year is 3. An indifferent specimen.

(II) Report on 115 old silver coins, forwarded by the Collector of Champaran, with his No. 233G, dated the $\frac{22}{23}$ May 1893.

The Collector in his letter to the Commissioner of the Patna Division, No. 137G, dated the 26th April 1893, states that on the 12th March 1893, two boys of Tolah Dih, Soogaon Pergana, while digging, found a *Kattia*, containing some 500 or 600 Rupees. Of these only 115 were eventually recovered by the Collector and transmitted to the Asiatic Society of Bengal for examination.

The descriptive list of the coins in the Collector's letter to the Commissioner is altogether incorrect. The following is a correct list of them. There are, coins of Akbar, 23; of Jahángir, 61; of Sháh Jahán, 31. Total: 115.

The following is a detailed description of them:—

(1) AKBAR, 963–1014 A. H. = 1556–1605 A. D.

(a) Type: round, *jalálí*, months of Ilahí years;
 mints: Ahmadábád³, Láhor⁶, Kábul⁴,
 Jahángirnagar¹ (?); dates 40¹, 41¹, 42¹,
 43¹, 44², 46¹, 47², 49¹, others mutilated,
 total 19

(b) Type: square, <i>jaljalál</i> , month <i>Apr</i> , date 32 ...	1
(c) Type: square, <i>Kalimah</i> ; date 999, mint?; and date <i>alif</i> (= 1000), mint <i>Urdú Zafar</i> <i>garín</i>	2
(d) Type: round, <i>Kalimah</i> , areas as in Brit. Mus. Cat., No. 108	1 23
(2) <i>JAHÁNGÍR</i> , 1014–1037 A. H. = 1605–1627 A. D. *	
(a) Type: round, lettered surfaces, months of Ilahi years; like Brit. Mus. Cat. Nos. 444, 467. Months: <i>Farwardín</i> ⁶ , <i>Ardíbihist</i> ¹ , <i>Khúrdád</i> ² , <i>Tír</i> ⁶ , <i>Amarád</i> ⁴ , <i>Shariwar</i> ¹ , <i>Mihr</i> ³ , <i>Abán</i> ⁶ , <i>Azar</i> ⁶ , <i>Zai</i> ³ , <i>Bahman</i> ² , <i>Isfandármiz</i> ⁴ . Mints: <i>Tattah</i> ¹ , <i>Jahángir-</i> <i>nagar</i> ² , <i>Akbarnagar</i> ² , <i>Rohrás</i> ¹ , <i>Patnah</i> ⁴	47
(b) Type: round, ornamental areas, like Brit. Mus. Cat., Nos. 447, 455; months of Ilahí years: <i>Khúrdád</i> ¹ , <i>Azar</i> ¹ , <i>Bahman</i> ¹ , <i>Isfan-</i> <i>darmiz</i> ² ; all Mint <i>Láhor</i>	5
(c) Type: round, lettered surfaces	8 60
(3) <i>SHÁH JAHÁN</i> 1037–1068 A. H. = 1627–1658 A. D.	
(a) Type: round, square areas, linear. In one specimen the area is double-lined	25
(b) Type: round, lettered surfaces	7 32
Grand total	115

(III) Report on 14 old silver coins forwarded by the Offg. Collector of Jessore, with his No. $\frac{G}{618}$, dated the 19th June 1893.

In his report to the Commissioner of the Presidency Division, No. $\frac{G}{618}$, dated the 19th June 1893, the Collector states, that the coins were found in Narail on the 7th April 1893, by a person while cutting the plinth of a dilapidated building. It appears that 60 coins were found, of which, however, only 14 have been recovered from the finder.

The identification of these 14 coins, given by the Collector in his letter to the Commissioner on the authority, I presume, of some Court Mohurir, is entirely wrong. They are said to be coins of a "Sultan Abu Mazafer (King of Bagdad in Asiatic Turkey)" and to be dated in "681 Hijra." In reality, they are the coins of some of the so-called "Independent Sultáns of Bengal;" viz., *Sikandar Sháh*, bin *Ilyás* (1358–89), *Ghiyásu-d-dín 'Azam Sháh* (1389–1396), *Saifu-d-dín Hamzah Sháh* (1396–1406), *Shihábu-d-dín Báyzid Sháh* (1409–1414),

and Jalálu-d-dín *Mahammad Sháh* (1414–1431 A. D.) Accordingly they cover a period of about 42 years. (From 1389 to 1431 A. D.)

The following is a detailed description :—

(1) SIKANDAR SHÁH BIN ILTÁŠ	
(a) One coin, like Brit. Mus. Cat., No. 37, mint Fírúzábád, date lost	1
(b) One coin, like Brit. Mus. Cat., No. 32, mint and date illegible, much cut by shroff-marks	1
(c) One coin, like Brit. Mus. Cat., No. 46, mint and date lost	3
(2) GHÍYÁS-U-D-DÍN 'AZAM SHÁH :	
(a) Two coins, like Brit. Mus. Cat., No 60, mint and date illegible, condition indifferent	2
(b) One coin, like J. A. S. B., xv. No. 5 ; mint Fírúzábád, date 794	
(3) SAIFU-D-DÍN HANZAH SHÁH,	
*Two coins, like Brit. Mus. Cat., No. 65 ; mint Fírúzábád, date of one 814, other lost.	
(4) SHIHÁBU-D-DÍN BAYÁZÍD SHÁH	
(a) Two coins, like Brit. Mus. Cat., No. 67, mints and dates lost	
(b) Two coins, like Brit. Mus. Cat., No. 68, mints lost, date 816	
(c) One coin, like Brit. Mus. Cat., No. 71	4
(5) JALÁLU-D-DÍN MUHAMMAD SHÁH	
(a) One coin, like Brit. Mus. Cat., No. 77, mint lost, date 834	2 ^a
(b) One coin, like Brit. Mus. Cat., No. 72, mint Fírúzábád, date illegible	2
Total	14

(IV) Report on three gold coins, forwarded by the Political Agent, Chhattisgarh Feudatory States, Rajpur, with his No. 4562, no date, 1893.

The three coins are stated to have been found in the bed of the river Ang, in the Feudatory State of Patna.

One of the coins is of pure gold ; the other two are of a mixed metal, with a large proportion of gold. They are of two different sizes ; two are $\frac{1}{2}$ inch, and one $\frac{1}{4}$ inch in diameter.

All three coins belong to precisely the same class as those reported on by me about three months ago (see *Proceedings* for April 1893, p. 92). The latter were 56 in number, and had also been found in one of the Feudatory States, Sarangarh. The coins of the present find belong to Jájalla Deva, of the Kalachuri dynasty of Chedi, who is said to have reigned from about 1090–1120 A. D.

The figure on the reverse which I described in my previous report as that of Hanumān, is more probably that of a recumbent bull, turned to the right. The legend on the obverse is *S'ri Maj-Jájalla Deva*. On the reverse, in front of the recumbent bull, there is found the syllable *má* or *ma*.

(V) Report on 28 old Silver Coins forwarded by the Offg. Collector of Bhagulpur, with his No. 810G, dated 9th July 1892, No. 1036G, dated 10th August 1892, and No. 1359G, no date.

These coins are said to have been found by two boys in a hole enclosed in an earthen pot, in Mauza Kotia, Pergana Shophar, Thana Pratalganj, Subdivision Supaul of the Bhagulpur District.

They are rupees of the following independent Sultāns of Bengal: Sikandar Sháh (2 specimens), Ghiyásu-d-din 'Azam Sháh (2), Saifu-d-din Hamzah Sháh (1), Jalálu-d-din Muḥammad Sháh (10) and Násiru-d-din Maḥmúd Sháh I (13), covering a period of about 75 years, or from 1357 to 1430 A. D.

The following is a detailed Statement:—

- | | | | |
|---|-----|-----|-----|
| 1, SIKANDAR SHÁH, BIN-JLYÁS, 759–792 A. H. = 1357–1389 A. D. | | | |
| Type as in Brit. Mus. Cat, No. 37, mint: Fírúzábád, date 784 | ... | ... | 2 2 |
| 2, GHİYÁSU-D-DÍN 'AZAM SHÁH, 792–799 A. H. = 1389–1396 A. D. | | | |
| Type as in Brit. Mus. Cat., No. 63, mint: Fírúzábád, dates 811, 810 (?) | ... | ... | 2 2 |
| 3, SAIFU-D-DÍN HAMZAH SHÁH, 799–809 A. H. = 1396–1506 A. D. | | | |
| Type as in Brit. Mus. Cat., No. 65, mint: Fírúzábád, date 814 | ... | ... | 1 1 |
| 4, JALÁLU-D-DÍN MUḤAMMAD SHÁH, 817–834 A. H. = 1414–1430 A. D. | | | |
| (a) Type, as in Brit. Mus. Cat., No. 83–85, mint: Fírúzábád, dates 817, 824 | ... | ... | 2 |
| (b) Type, as in Brit. Mus. Cat., No. 81, mint and date (?) | ... | ... | 2 |

(c) Type, as in Brit. Mus. Cat., No. 87, mint: Arcot, Chatgáon, dates 834, 832 ^a	4
(d) Type, not in Brit. Mus. Cat., but general style as in No. 83, with obverse as in No. 78, mint: Fírúzábád, date 831	2 10
5, NÁSIRU-D-DÍN MAHMÚD SHÁH I, 846-864 A. H. = 1442-1459 A. D.	
(a) Type, not in Brit. Mus. Cat., mint: Chatgáon, date 844 or 843	7
(b) Type, not in Brit. Mus. Cat., mint: Chatgáon, date 841, 842	6 13
Total	28

VI. Report on 44 old silver coins forwarded by the Extra Asst. Commissioner, Sibsagar, with his No. 3754, dated 5th December 1891.

The coins are stated to have been found in the possession of a man on the Numogarah Tea Estate, but no information is given as to the circumstances under which they were found by him, or came into his possession.

They are of four different descriptions: One belongs to the Imperial Delhi issue of 'Aláu-d-dín Muḥammad Sháh (1295-1315 A.D.); another to one of the Early Dependent Governors of Bengal, Ghiyáṣu-d-dín Bahádur Sháh (1310-1330 A.D.); 38 to some of the so-called "Independent Sultáns of Bengal," (*viz.*, Ghiyáṣu-d-dín 'Azam Sháh 1389-1396, Shihábu-d-dín Báyzid Sháh, 1409-1414, Jalálu-d-dín Muḥammad Sháh, 1414-1431, Násiru-d-dín Maḥmúd Sháh, 1442-1459, Ruknu-d-dín Bárbak Sháh, 1459-1474, Shamsu-d-dín Yúsuf Sháh, 1474-1481, Jalálu-d-dín Fath Sháh, 1481-1486, Saifu-d-dín Fírúz Sháh, 1486-1489, Shamsu-d-dín Muẓaffar Sháh, 1490-1493, 'Aláu-d-dín Husnín Sháh, 1493-1518 A. D.), and 4 Hindú coins. So far as ascertainable, the coins of the find cover a period of nearly two centuries and a quarter. (From 1295 to 1518 A. D.) Regarding the items of the find, there is a curious resemblance between it and another from Kámrúp, a report on which is printed in the *Proceedings* of the Society, for April 1893.

The following is a detailed statement:—

(A) Imperial Delhi issue:—

(1) 'ALÁU-D-DÍN MUḤAMMAD SHÁH—

A coin, like Brit. Mus. Cat., No. 164, and
Chron. No. 132, mint and date lost, cut
by shroff-marks, indifferent ... 1 1

(B) Provincial Bengal issue:—

(2) *GHİYÁSU-D-DÍN BAHÁDUR SHÁH*—

A coin like Brit. Mus. Cat., No. 4, Chron.

Nos. 169, 170, mint and date lost, much

cut by shroff-marks, indifferent ...

1 1 •

(C) Independent Bengal issues:—

(3) *GHİYÁSU-D-DÍN 'AZAM SHÁH*—

(a) One coin, like Brit. Mus. Cat., No. 53

(Not in Thomas); mint lost, date [7]90 1

(b) One coin, like Indian Mus. Cat., No. 9874,

apparently no margins with mint or

date, with shroff-marks ...

1 2

(4) *SHIHÁBU-D-DÍN BAYAZÍD SHÁH*—

One coin, like Brit. Mus. Cat., No. 68, and

Journal, As. Soc. Beng., XLII, p. 263,

No. 2, date 812, mint lost ...

1 1 •

(5) *JALÁLU-D-DÍN MUHAMMAD SHÁH*—

One coin, new type, unpublished, obv. in

tughra, date 824 (?). Rev. 'Abdul Jabbár

in small circular centre, within broad

arabesque margin ...

1 1

(6) *NÁSIRU-D-DÍN MAHMÚD SHÁH*—

(a) One coin, tughra type, like Brit. Mus.

Cat., No. 83, mint and date illegible ... 1

(b) Three coins, Muzaffar type, like *J. A. S. B.*

LII, p. 217, Nos. 1, 2; date of one 756;

two very badly cut with shroff-marks... 3

(c) One coin, new type unpublished: obv.

Náṣīru-d-dīn, etc., in oblong area withinlined and dotted circle; rev. *Náib*, etc.,

within circle; margin cut away; date

and mint on area *Firúzábád* 757 ...

1 5

(7) *RUKNU-D-DÍN BARBAK SHÁH*—

(a) Two coins, like Brit. Mus. Cat., No. 90,

mint: Jannatabad (?), date 873 ... 2

(b) One coin, Mujáhid type, like *J. A. S. B.*,

LII, p. 219, No. 12; date 874 ... 1

(c) Six coins, like *J. A. S. B.*, XLII, p. 275,

No. 1 (Pl. IX, No. 7). The margin,

which probably gave mint and date is

lost, or nearly lost on all ...

6 9

- (8) **SHAMSU-D-DÍN YÚSUF SHÁH—**
- (a) One coin, a new variety of Brit. Mus. Cat., No. 92, *Khazánah* 881 ... 1
 - (b) One coin, new, unpublished, legend as on Brit. Mus. Cat., No. 92, but obv. in lozenge area; mint and date illegible; cut by shroff-marks ... 1
 - (c) One coin, new, unpublished, legends similar as on the above coins, but both faces of coin divided into four compartments by straight lines ... 1
 - (d) One coin, new, unpublished, a new variety of Brit. Mus. Cat., No. 92 ... 1 4
- (9) **JALÁLU-D-DÍN FATEH SHÁH—**
- (a) Three coins, like Brit. Mus. Cat., No. 98 in indifferent condition; mints and dates lost ... 3
 - (b) One coin, like Brit. Mus. Cat., No. 94, *Fathábád* 886 ... 1
 - (c) One coin, new variety of Brit. Mus. Cat., No. 98, on both faces legends in double lined octagons within outer circle; *Jannatábád* 88* ... 1
 - (d) One coin, new variety of Brit. Mus. Cat., No. 97, *Khazánah* 890 ... 1 6
- (10) **SAIFU-D-DÍN FÍRÚZ SHÁH—**
- (a) Two coins, like Brit. Mus. Cat., No. 99, *Khazánah* 896 and 894 ... 2
 - (b) One coin, like Brit. Mus. Cat., No. 100, *Fathábád* 893 ... 1 3
- (11) **SHAMSU-D-DÍN MUẒAFFAR SHÁH:**
- (a) One coin, with *Abul Nasr*, like Brit. Mus. Cat., No. 105, mint and date illegible ... 1
 - (b) One coin, new, unpublished, with *Abul Muẓaffar*, [89]8 ... 1 2
- (12) **'ALÁU-D-DÍN HUSAIN SHÁH—**
- (a) Two coins, like Brit. Mus. Cat., Nos. 124, 128, *Fathábád* 89[9], *Muḥammadábád* 899 ... 2
 - (b) Two coins, very crude imitations ... 2
 - (c) One coin, almost illegible ... 1 5

(D) Hindú Coins—

(a) Two coins of **Mahārāja Rūpa Nārāyaṇa**;
 legend on obv. *S'ri S'ri Mahārāja Rūpa*
Nārāyaṇa Chāṇḍī Oharaṇa, 1667 ... 2

(b) Two coins, illegible ... 2 4

Grand Total ... 44

Dr. Hoernle read the following letter from Mr. E. A. Gait, C.S., forwarding eight coins—

"I have recently been trying to collect some coins of the Koch kings. The only two hitherto published (so far as I am aware) being those referred to by Blüchmann (*J. A. S. B.*, 1875, p. 306).

"Babu Madhab Chunder Bardaloi, E. A. C. at Barpeta, has just sent me eight coins which I enclose. Four of these are of the Koch dynasty and one of Jaintia.

"I have written asking him if the persons from whom he got them are willing to let me keep them, and if so, I shall be happy to give them to the Society. In any case, their examination will doubtless be of interest.

"In the course of next cold weather, I hope to add considerably to the number of coins now sent."

Dr. Hoernle said that of the coins forwarded by Mr. Gait, four were of Kuch Behar, one of Jayantipur, one of Assam, and two of Nepal. They were as follows:—

1. Kuch Behar; a large coin of Lakshmi Nārāyaṇa, dated 1069, like No. MCCIII, in Marsden's *Numismata Orientalia*.
2. Kuch Behar; a small coin of Narendra Nārāyaṇa (Nara Nārāyaṇa?), like No. 6, Plate XLV, in Vol. II of Prinsep's *Indian Antiquities*, and similar to No. MCCXVIII in Marsden.
3. and 4. Kuch Behar; two small coins, duplicates, of Bala Nārāyaṇa (?); see *Journal As. Soc. Bengal*, Vol. XLIV, p. 306.
5. Jayantipur; a large coin of Purandara, dated 1630; like No. MCCXVI in Marsden.
6. An old Assamese octagonal coin, similar to No. MCCXXI in Marsden, with illegible inscriptions.
7. Nepal, a large coin of Bhūpatindra Mala Deva, dated 819.
8. Nepal, a large coin of Jagajjaya Mala Deva, called Mahīpatindra, dated 868.

The PRESIDENT announced that the Council had elected Dr. A. F. R. Hoernle to officiate as Philological Secretary in the place of Mr. G. A. Grierson.

The SECRETARY read a letter, dated 7th July 1893, from Professor Dr. R. Semon, forwarding an invitation to subscribe for the erection of a marble bust of Professor Dr. Ernst Haeckel (a Centenary Member of the* Society) in the Zoological Institute in Jena, on his sixtieth Birthday. He stated that the Council were of opinion that the constitutions of the Society did not allow its funds to be used for such a purpose, but that he would be glad to forward any subscriptions from members in their private capacity.

The following papers were read :—

1. *Blind Root-suckers of the Smulderhans*.—By H. L. HEINIG, Esq., Deputy Conservator of Forests.—Communicated by the Natural History Secretary.

The paper will be published in the *Journal*, Part II.

2. *On a new find of Ancient Nepalese Sanskrit Manuscripts*.—By PANDIT HARA PRASAD SĀSTRĪ.

The paper will be published in the *Journal*, Part I.

LIBRARY.

The following additions have been made to the Library since the Meeting held in July last :—

TRANSACTIONS, PROCEEDINGS AND JOURNALS,

presented by the respective Societies and Editors.

Baltimore. Johns Hopkins University,—*American Chemical Journal*, Vol. XIV, Nos. 2-7.

———. ————. *American Journal of Mathematics*, Vol. XIV, Nos. 2 and 3.

———. ————. *American Journal of Philology*, Vol. XII, No. 4; XIII, 1-3.

Circulars, Vol. XII, Nos. 106 and 107.

Bombay. Bombay Natural History Society,—*Journal*, Vol. VIII, No. 1.

———. *The Indian Antiquary*, Vol. XXII, Part 275.

Boston. Boston Society of Natural History,—*Memoirs*, Vol. IV, No. 10.

———. ————. *Proceedings*, Vol. XXV, Parts 3 and 4.

Calcutta. Asiatic Society of Bengal,—*Proceedings*, No. VI, June, 1893.

———. *Indian Engineering*, Vol. XIV, Nos. 2-5.

———. Maha-bodhi Society,—*Journal*, Vol. II, No. 3.

———. Photographic Society of India,—*Journal*, Vol. VI, No. 7.

Cassel. Des Vereins für Naturkunde zu Kassel,—*Bericht*, XXXVIII.

- Copenhagen. Kongelig Nordiske Oldskrift-selskab,—Aarbøger, II Række, Bind VIII, Hefte 1.
- Danzig. Der Naturforschenden Gesellschaft in Danzig,—Schriften, Band VIII, Heft 1.
- Florence. La Società Africana d' Italia,—Bullottino, Tome I (serie seconda), Fasc. 1-3.
- Frankfurt, a/o. Des Naturwissenschaftlichen Vereins des Reg.-Bez. Frankfurt,—Helios, Jahrg. X, Nrn. 10-12; XI, 1.
- . ———. Societatum Litterar., Jahrg. VII, Nrn. 1-3.
- Graz. Des Naturwissenschaftlichen Vereines für Steiermark,—Mittheilungen, Jahrg 1892.
- Hamburg. Naturhistorischen Museum in Hamburg—Mittheilungen, Jahr X, Heft 1.
- Leipzig. Der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig,—Math.-Phys. cl., Verhandlungen, Nrn. 2-3, 1893.
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- . The Athenæum,—Nos. 3426-3429.
- . Institution of Mechanical Engineers,—Proceedings, No. 4, 1892.
- . The Nature,—Vol. XLVIII, Nos. 1234-1237.
- . Royal Asiatic Society of Great Britain and Ireland,—Journal, Part III, 1893.
- . Royal Geographical Society,—Geographical Journal, Vol. II, No. 7.
- . Royal Microscopical Society,—Journal, Part 2, 1893.
- . Royal Society,—Proceedings, Vol. LII, Nos. 318 and 319; LIII, 321.
- . Royal Statistical Society,—Journal, Vol. LVI, Part I.
- Madison, Wis. Wisconsin Academy of Sciences, Arts, and Letters,—Transactions, Vols. III—VIII.
- Mexico. La Sociedad Científica "Antonio Alzate,"—Memorias y Revista, Tome VI, Nos. 9 et 10.
- Moscow. La Société Imperiale des Naturalistes de Moscou,—Bulletin, No. 1, 1893.
- Mussoorie. The Indian Forester,—Vol. XIX, No. 7.
- New Haven. American Oriental Society,—Proceedings, April 6-8; 1893.
- New York. American Museum of Natural History,—Bulletin, Vol. IV.
- Paris. Journal Asiatique,—Tome I (IX^e Série), No. 1.
- Philadelphia. Academy of Natural Sciences of Philadelphia,—Journal, Vol. IX (2nd series), Part 3.
- . ———. Proceedings, Part II, 1892.
- . American Philosophical Society,—Proceedings, Vol. XXX, No. 139.

Pisa: *La Società Toscana di Scienze Naturali*,—*Atti*, *Tomo XII*.

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Prose, Part LXXXI. 8vo. Calcutta, 1893.

TARKALANKARA, CHANDRAKANTA. *Chandrabhusa*. 8vo. Calcutta, 1892.

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Catalogue of the British Echinoderms in the British Museum (Natural History). By F. Jeffrey Bell. 8vo. London, 1892.

Catalogue of Chinese Coins from the VII Cent. B. C. to A. D. 621,
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Illustrations of Typical Specimens of Lepidoptera Heterocera in the collection of the British Museum, Part IX. By George Francis Hampson. 4to. London, 1893.

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Report on the Judicial Administration (Criminal) of the Central Provinces for the year 1892. Fcp. Nagpur, 1893.

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Returns of the Rail-borne Traffic of the Central Provinces during the quarter ending 31st March, 1893. Fcp. Nagpur, 1893.

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Administration Report of the Government, Central Museum, for the year 1892-93. Fcp. Madras, 1893.

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Annual Report on Emigration from the Port of Calcutta to British and Foreign Colonies, 1892. Fcp. Calcutta, 1893.

Annual Report on the Police Administration of the Town of Calcutta and its Suburbs for the year 1892. Fcp. Calcutta, 1893.

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DEVRIES, WILLIAM LEVERING. *Ethopoiia: A Rhetorical Study of the Types of Character in the Orations of Lysias.* 8vo. Baltimore, 1892.

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Memorandum on the snowfall in the mountain districts bordering Northern India and the abnormal features of the weather in India during the past five months, with a forecast of the probable character of the south-west monsoon rains of 1893.

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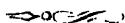
———. Revue Scientifique,—Tome LI, No. 25; LII, 1-3.

BOOKS PURCHASED.

NEWBERRY,* PERCY E. BENI HASAN. Part I. (Archæological Survey of Egypt). 4to. London, 1893.

- RAY, PRATAPA CHANDRA. The *Mahabharata*, translated into English Prose, Parts I—LXXIX, LXXXI. 8vo. Calcutta, 1883-93.
- Report of the Sixty-second Meeting of the British Association for the Advancement of Science held in Edinburgh in August 1892. 8vo. London, 1893.
- THOMPSON, EDWARD MAUNDE. Hand-book of Greek and Latin Palæography (International Scientific Series, Vol. LXXIII). 8vo. London, 1893.
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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL,
FOR NOVEMBER, 1893.



The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 1st November, 1893, at 9 P.M.

DR. A. F. R. HOERNLE, Vice-President, in the chair.

The following Members were present:—

W. B. Colville, Esq., His Grace The Most Rev. Dr. Paul Goethals, C. L. Griesbach, Esq., T. H. Holland, Esq., The Rev. H. B. Hyde, Dr. W. King, C. Little, Esq., T. R. Munro, Esq., Dr. F. Noetling, The Rev. G. Sandberg, C. R. Wilson, Esq.

The minutes of the last meeting were read and confirmed.

Eighty presentations were announced, details of which are given in the Library List appended.

THE SECRETARY reported that the following gentlemen had been elected Ordinary Members of the Society during the recess, in accordance with Rule 7.

Bábu Purmashwar Narain Mahatha.

Surgeon-Captain R. Anderson.

G. P. Tate, Esq.

Banawarilala Chowdhuri, Esq.

The following gentlemen, duly proposed and seconded at the Council Meeting, were ballotted for and elected Ordinary Members:—

Bábu Gyanendra Kumar Rai Chaudhuri.

B. Dé, Esq., C.S.

The following gentlemen have expressed a wish to withdraw from the Society :—

Colonel S. B. Miles.

R. H. Macleod, Esq., C.S.

THE SECRETARY reported the death of the following Member :—

Mahārājā Sir Hatendra Kishore Singh, K.C.I.E.

THE CHAIRMAN said that it might interest the members of the Asiatic Society to know that Mr. Stanley Lane-Poole had written last month to say that he was about to issue a book entitled "The Mohammadan Dynasties," covering about 400 pages, and costing about 10 shillings. The book would be published by Messrs. Constable & Co., Parliament Street, Westminster. It contained lists and genealogies of the Mohammadan Empire (including India), from the first Caliphs to the Khedives and Amins of Afghanistan, together with historical introductions explaining their relative positions,*&c., and geographical boundaries.

THE CHAIRMAN announced that the Council had elected Mr. C. Little to officiate as Treasurer in the place of Dr. W. King. •

THE SECRETARY reported that Bābu Sambhu Nath Sukul had not paid his admission fee, and in accordance with Rule 9 of the Society's Bye-laws his election as a Member of the Society was cancelled.

On the motion of the Chairman, it was resolved by the meeting to purchase, at the cost of Rs. 200, three very old and important copper-plate grants in the well-known Gupta characters, which had been dug out near Faridpur in Eastern Bengal. They will form a valuable addition to the Society's collection of copper-plates.

Dr. Hoernle exhibited two curious dies which he had received from Mr. Ibbetson, the Deputy Commissioner of Jullundur. They had been found in the house of a man of that district together with a large number of so-called "coins" made in a cheap white alloy. Dr. Hoernle explained that these objects were not coins, but might be medals, though the occasion or object for which they were made was not known at present. They appeared to belong to the same class as the so-called and well-known Rautinkis. The latter were made of gold, and were medals struck for ceremonial purposes. Silver medals of this kind were never known to exist, till three years ago, when one was presented to the Society by Rājā Siva Prasād of Benares. That specimen looked like a cast taken from some gold original. Silver medals struck from dies first appeared two years ago, since when they have been brought

numerously on the market, and can be obtained at most of the large towns in North India. In the Calcutta bazar they can be got for about Rs. 1-8 each. The specimens obtainable here, however, seem to be made of real silver (Rupee-silver). They are occasionally palped off on inexperienced coin-collectors as "coins" at extravagant prices. There are several varieties of them current. Dr. Hoernle himself had met with four varieties in Calcutta. The dies sent from Jullundur showed a fifth variety; and probably new varieties or new combinations of old varieties, were constantly made, as the demand for them increased. The general type of these silver medals showed figures of Rām and Sītā with attendants on both sides, with a legend in a species of rude modern Nāgarī round the margin. The four varieties, obtained in Calcutta were as follows: No. 1, obverse: Rām and Sītā, seated on a throne under an umbrella, legend *Sītā Rāma* five times repeated: reverse: Rāma and Hanumān standing face to face, legend *Hanumān*, six times repeated.

No. 2. Obverse: Rām, Lakshman and Sītā, seated on a throne, and Hanumān standing before them, holding an umbrella over them; legend: *Sītā Rāma* five times repeated. Reverse: same as on No. 1.

No. 3. Obverse: same as on No. 2. Reverse: Rām and Lakshman standing in file, beside one another; legend *Sītā Rāma* (again) five times repeated.

No. 4. Obverse: Horseman followed by a groom on foot, and a dog: legend: *Rājā [Vika] ramajit*, three times repeated. Reverse: A man standing, feeding two peacocks out of a vessel, and a bull sitting; legend: as on obverse.

The Jullundur medal shows on the obverse: Rām and Sītā seated on a throne; Hanumān standing in front in respectful attitude; Lakshman standing behind, holding umbrella over throne; legend: *Sītā Rāma*, three times repeated. Reverse: like reverse of No. 3, but legend: *Rāma nāma*, four times repeated.

The following papers were read:—

1. *On the relationship between Tibetan Orthography and the Original Pronunciation of the Language.*—By THE REV. F. B. SHAWE, *Missionary in Ladak.*

(Abstract.) •

It is well-known that the orthography and the pronunciation of the Tibetan language are widely discrepant, so much so that it has been doubted whether "the Tibetans ever pronounced their words as they wrote them." The author produces facts and reasons to show that the

doubt is not well founded, but that, on the contrary, there is much probability that at the time the Tibetan alphabet was "invented," in the 7th century A.D., the actual pronunciation of the language corresponded to the orthography. The evidence for this is mainly summarised from Jäschke's *Essays* on the subject, supplemented by observations made by Mr. Shawe himself. The evidence from the literary language is summed up thus: "Whilst many identically pronounced words are spelled identically, many more are spelled in a more or less widely differing manner in accordance with the differing signification; and whilst certain rules of language cause a modification in pronouncing certain syllables, the identical rule prevents the modification from taking place in writing." But the most striking evidence is afforded by the dialects. In these, not unfrequently, consonants which are mute in the ordinary (literary) pronunciation are distinctly sounded. This practice is most marked in the most westerly provinces of Purig and Balti, that is, in those provinces which are most widely distant from the seat of Buddhistic and literary culture. Thus in Purig, people pronounce *sgrom* "a box," *gri* "a knife," etc., just as written གྲོམ་ and གྲི་, which in the ordinary Tibetan are pronounced *dom*, *di*. This practice can only be a survival of a former universal mode of pronunciation.

This paper will be published in Part I of the *Journal*.

2. *The Koch Kings of Kamrup.* By E. A. GAIT, Esq., C.S.

(Abstract.)

The author first enumerates the extant accounts of the Koch dynasty. The best of these is a Manuscript history in Sanskrit, called the *Vaṃśāvalī*, or *Purushanāma*, and written about 1806 A.D., by a certain Sūrya Hari Ganak. It is now in the possession of Rājā Lakṣmī Narāyaṇ Kuar, the leading representative of the Darrang branch of the Koch family. An abstract of it is given, supplemented by information derived from inscriptions and other sources. The early history of Kāmarūpa is, as usual, semi-mythical. The earliest kings are said to have been Mahirang Dānab, Ghatak Kirāt, Narak Asur and Bhogadatta, and others of the latter's line. The 19th in it was Subāhu, who resigned in favour of his son Saparna, who was killed by his ministers. After this, three kings are mentioned, Jitāri, Arimat, and Jongāl Balahu. Four other kings are also mentioned as having reigned for 300 years at Lohityapur, viz., Mimang, Gajang, Sribang and Mrigang. The earliest authentic accounts commence with Hiuen Tsiang who visited Kāmarūpa about 640 A.D., at which time a Hindū

or Hinduised prince, Kumār Bhāskara Varman, was on the throne. Later it appears that the country belonged to the dominions of the well-known Pāla kings. Seventeen princes of this name are mentioned, but some of them may not have belonged to the Pāla dynasty. Later on we come on more certain ground with the Khyen dynasty, the founder of which was Niladhvaj. He was succeeded by his son Chakradhāj and his grandson Nilambar. In the latter's reign, his capital Kamatapur was captured by Husain Shāh of Bengal, in 1498 A.D. Some other Muhammadan invasions, earlier as well as later, are here noticed. In the meantime the Koch chiefs were gradually rising to power. Their founder is one Haria Maṇḍal, to whom a mythological Kashatriya origin is assigned. He had two sons, Sib Singh and Biswa Singh, who defeating all the Bhuiyas, built a magnificent city in Kuch Behar. In their days, Rangalugrah was the eastern boundary. Biswa Singh was succeeded by the two brothers, Malla Deo and Sukladhāj, who are known by the names of Nar Narāyan and Silarāi. Nar Narāyan fought many successful wars, and it was he who greatly extended and consolidated the kingdom. He divided finally his kingdom in two parts. The portion west of the river Sankosh was given to Lakshmi, the son of Nar Narāyan, while the country to the east of that river, with the capital at Barnagar, was allotted to Raghu, the son of Silarāi. The latter was succeeded by his son Parikhit, who quarrelled with Lakshmi and annexed his dominions. Lakshmi appealed to the Mogul emperor Jahāngir, who sent a force to reinstate him. Parikhit was defeated and died soon afterwards in 1614 A.D. But a brother of his, Buli Narāyan, succeeded, for a time, in recovering his kingdom from the Muhammadans, with the help of the Ahom King, Svarga Narāyan. He reigned till 1637 A.D. So far the history of the Koch family is related in the *Vaṁśavalī*. The subsequent history may be found in Hunter's *Statistical Account of Kuch Behar*, supplemented by the statements on the *Fathiyah i Ibriyah*, published by Blochmann in the *Journal* of this Society for 1872.

This paper will be published in Part I of the *Journal*.

3. *Origin of the Baluch.*—By COLONEL MÖCKLER. Submitted through COLONEL T. H. HALDICH.

(Abstract.)

This paper is mainly concerned with the Rind, one of the tribes or clans inhabiting Balochistan. Their name signifies "a turbulent, reckless, daring man." They have never acknowledged the authority of any ruler in the country. They claim to be the true Balôch, and assert that

they originally came from "Alaf," which is supposed, by themselves and most other people, to be Haleb or Aleppo, in Syria. They say that they are Arabs of the tribe of Koreish, and were driven out from Alaf by Yezced I, for assisting Husain, the martyr nephew of the Prophet Muhammad, in 61 Hijrah. The author shows, however, from some Arab authorities that the Balôch were established in Makrán more than a century before the commencement of the Muhammadan era, certainly so, if, as Firdûsî relates, Nowshîrwân punished them in Makrán in 550 A. D.,—and still more certainly that they were located there within 22 years after its commencement,—and that therefore, if the Rinds left Aleppo in the time of Yezced I, about 61 H., the Balôch were in Makrán before that date. But it is doubtful whether the Rinds ever came from Aleppo or that they are Balôch at all. It is much more probable that they are the descendants of a certain al Harîth al 'Alâfî, that is, of Harîth of the 'Alâfî tribe and of the Kahtanic stock of Arabs. He was the father of two men, who, according to Tabarî, in a blood-feud killed an officer who had been appointed by Al Hajjâj, the governor of Irak, to the charge of Makrán, in 65 H. They had come from 'Umân, and after the murder took possession of Makrán. Subsequently, about 80 H. they retired before a punitive force of Al Hajjâj into Sindh, where their name is conspicuous in the annals of the country for the next 200 years or so. This, and other facts, show that the Rinds really are of Arab descent, but that they did not come from Aleppo, but are descended from a man of the Alâfî tribe who came from 'Umân; and that they are not of the Koreish, but the Kahtan stock. On account of their undoubted Arab descent, the Rinds are held in very high respect by the other clans of Balôchistan who, therefore, all claim to be related to them, through one Jalâl Khân, an ancestor of the Rinds. Among the sons of this Jalâl, Makrán is said to have been divided after the death of Al Hajjâj. With regard to the name Balôch, Col. Mœckler suggests its identity with the Gedrosii of the Greeks. He says that the Balôch themselves explain their name by the phrase "Balôch Badrôch" (or Badrôsh). Here *bad* means 'evil,' and *rôch* or *rôsh* means 'day.' In Pahlavi or Zend *gad* is synonymous with *bad*; therefore *Badrôsh* = *gad-rôsh* or *gadros*, whence the Greek Gedrosii. By the interchange of the liquids *g* and *l*, *badrôch* would become *badlôch*, out of which the *d* must naturally drop, leaving the Balôch = the Gedrosii. Or, on the other hand, the proverbial expression Balôch-Badrôch may have been current in the time of the Greeks in the form Balôch-Gadrôsh, and the Greeks confused the epithet with the name. The latter would then be derived from Belus king of Babylon, a derivation which is adopted by Prof. Rawlinson.

This paper will be published in Part I of the *Journal*.

4. *Note on the Official Reckoning of the reigns of the later Mogul Emperors, and on some of their Mint-towns.*—By W. IRVINE, Esq., C.S., (retired).

(Abstract.) *

The author begins by showing that all the information of European and Native Indian historians regarding the initial date of Aurangzib's reign is ultimately traceable to the 'Alangirūmah of Muḥammad Qāzīm. This writer states that in the time of the real enthronement of Aurangzib, with full ceremonials, on the 24th Ramazān 1069 (= 15th June 1659), it was decided to antedate the commencement of his reign from the 1st of Ramazān 1068, when he made the first attempt to assume the imperial power. Mr. Irvine says that for chronological purposes it is best to accept the officially fixed date, though it may be a fictitious one. He then shows from certain coins in the British Museum which are dated 1118 Hijrah, and the 51st year regnal, that they only agree with the official reckoning; for Aurangzib, as generally admitted, died in 1118, after a reign of 50 years (lunar), 2 months and 27 days. Some further remarks, then, follow on the official initial date of the reigns of some of Aurangzib's successors. The author concludes with some notes on the identity of the mint-towns 'Alangīrpur, Mu'azzamābād, Naṣratābād, Shāhābād Qanauj, and Zafarābād.

Dr. Hoernle remarked that he agreed with Mr. Irvine that the officially fixed date of Aurangzib's reign must be accepted. He pointed out, however, that there were certain coins, dated in 1070 H. and the 1st year (*aḥad*) regnal, which did not accord with the official reckoning, and suggested a solution of the difficulty.

The paper, with Dr. Hoernle's note, will be published in Part I of the *Journal*.

5. *On a Slab of Chinese Agglomerate Lava, bearing a Chinese inscription, discovered in St. John's Churchyard, Calcutta.*—By T. H. HOLLAND, Esq., A.R.C.S., F.G.S.

6. *The Petrology of Job Charnock's Tombstone.*—By T. H. HOLLAND, Esq., A.R.C.S., F.G.S.

These papers will be published in the *Journal*, Part II.

7. *On flint implements from the Kon ravines of South Mirzapore.*—By JOHN COCKBURN, Esq.

8. *On some beliefs in a Being or Animal which is supposed to guard hidden treasure.*—By BABU SARAT CHANDRA MITRA, M.A., B.L. Communicated by THE ANTHROPOLOGICAL SECRETARY.

9. *On some Superstitions regarding Drowning and Drowned Persons.*—
By BABU SARAT CHANDRA MITRA, M.A., B.L. Communicated by THE
ANTHROPOLOGICAL SECRETARY.

These papers will be published in the *Journal*, Part III.

LIBRARY.

The following additions have been made to the Library since the meeting held in August last:—

TRANSACTIONS, PROCEEDINGS, AND JOURNALS,

Presented by the respective Societies and Editors.

Angers. La Société d' Etudes Scientifiques d' Angers,—Bulletin, 1891.

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Notulen, Deel XXXI, Aflevering 2.

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kunde, Deel XXXVI, Aflevering 6.

Bombay. Bombay Branch of the Royal Asiatic Society,—Journal, 1892.

———. Bombay Natural History Society,—Journal, Vol. VII, No. 5.

———. The Indian Antiquary,—Vol. XXI, Part 268, No. 2; XXII,
277.

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Budapest. La Société Hongroise de Géographie,—Bulletin, Tome
XXI, Fasc 1-4.

Calcutta. Asiatic Society of Bengal,—Journal, Part II, No. 2, 1893.

———. ————. Proceedings, Nos. 7 and 8, 1893.

Geological Survey of India,—Memoirs, 9th series, Vol. II,
Part 1.

Records Vol. XXVI, Part 3.

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Vol. XII.

———. Maha-bodhi Society,—Journal. Vol. II, Nos. 4 and 5.

———. Photographic Society of India,—Journal, Vol. VI, Nos.
8-10.

Chicago, Ill. The American Antiquarian and Oriental Journal,—Vol.
XV, No. 4.

Colombo. Ceylon Branch of the Royal Asiatic Society,—Journal, 1890.

Copenhagen. Kongelige Nordiske Oldskrift-Selskab,—Aarboger, II
Raekke, Bind VIII, Hefte 2.

Dresden. Gesellschaft Iris zu Dresden,—Deutsche Entomologische Zeitschrift, Band V, Heft 2; VI, 1.

Frankfurt, a/o. Des Naturwissenschaftlichen Vereins des Reg-Bez Frankfurt,—Helios, Jahrg XI, Nrn 2-5.

———. Societatum Litterar, Jahrg VII, Nrn 4-7.

Giessen. Der Oberhessischen Gesellschaft für Natur-und Heilkunde, —Bericht, Band XXIX.

The Hague. Koninklijk Instituut voor de Taal-Land en Volkenkunde van Nederlandsch-Indië,—Bijdragen tot de Taal-Land-en Volkenkunde van Nederlandsch-Indië, 5^e Volgr, VIII Deel, Afllevering 3.

Hamilton. Hamilton Association,—Journal and Proceedings, 1892-93.

Havre. Société de Géographie Commerciale du Havre,—Bulletin, Mai-Juin, 1893.

Ithaca. Cornell University,—Library Bulletin, Vol. III, No. 4.

Königsberg. Der Physikalisch. Ökonomischen Gesellschaft zu Königsberg in Pr.—Schriften, Jahrg. XXXIII.

Leipzig. Der Deutschen Morgenländischen Gesellschaft,—Abhandlungen für die Kunde des Morgenlandes, Band X, Heft 1.

———. Zeitschrift, Band XLVII, Heft 2.

———. Der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig (Phil-Hist. cl.), Verhandlungen, Nr. 1, 1893.

London. The Academy,—Nos. 1107-1119.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XXII, No. 4.

———. The Athenæum,—Nos. 3430-3442.

———. Geological Society,—Quarterly Journal, Vol. XLIX, Part 3.

———. Institution of Civil Engineers,—Minutes of Proceedings, Vol. CXII.

———. List of Members corrected up to 3rd June, 1893.

———. Institution of Electrical Engineers,—Journal, Vol. XXII, No. 107.

———. Institution of Mechanical Engineers,—Proceedings, No. 1, 1893.

———. Nature,—Vol. XLVIII, Nos. 1238-1250.

———. Royal Astronomical Society,—Monthly Notices, Vol. LIII, No. 8.

———. Royal Geographical Society,—Geographical Journal, Vol. 11, Nos. 2-4.

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———. Royal Statistical Society,—Journal, Vol. LVI, Part 2.

Lyon. Muséum d' Histoire Naturelle de Lyon,—Archives, Tome V.

- Lyon. La Société d' Agriculture Histoire Naturelle et Arts Utiles de Lyon,—*Annales*, 1889-92.
- Manchester. Manchester Literary and Philosophical Society,—*Memoirs and Proceedings*, Vol. VII, Nos. 2 and 3.
- Melbourne. Royal Society of Victoria,—*Proceedings*, Vol. IV, Part 2
- Mussoorie. The Indian Forester,—Vol. XIX, Nos. 8-10.
- Nantes. La Société des Sciences Naturelles de L' Ouest de la France,—*Bulletin*, Tome III, No 1.
- Naples. La Società Africana d' Italia,—*Bollettino*, Anno XII, Fasc. 5 et 6.
- Paris. La Société d' Anthropologie de Paris,—*Bulletins*, IV^e série, Tome III, Fasc. 4; IV, 1-4.
- . ——. *Mémoires*, Tome IV (II^e Série), Fasc. 4.
- . *Journal Asiatique*,—Tome I (IX^e Série), No. 2.
- . *Musée Guimet*,—*Annales*, Tome XXIV.
- . ——. *Revue de l' Histoire des Religions*, Tome XXVII, Nos. 1 et 2.
- . La Société de Géographie,—*Bulletin*, Tome XIII, No. 4; XIV, 1.
- . ——. *Comptes Rendus des Séances*, Nos. 12-14, 1893.
- Prague. Der K. K. Sternwarte zu Prag,—*Magnetische und Meteorologische Beobachtungen*, 1892.
- Rome. La Società Degli Spettroscopisti Italiani,—*Memorie*, Tome XXII, Nos. 6 et 7.
- Santiago. Des Deutschen Wissenschaftlichen Vereines zu Santiago (Chile),—*Verhandlungen*, Band II, Heft 5 und 6.
- St. Petersburg. Comité Géologique,—*Bulletins*, Tome XI, Nos. 9-10; XII, 1-2.
- . ——. *Mémoires*, Tome IX, No. 2; X, 2.
- . Russian Imperial Geographical Society,—*Proceedings*, Vol. XXIX, Nos. 3 and 4.
- Sydney. Linnean Society of New South Wales,—*Proceedings*, Vol. VIII (2nd Series), Part I.
- Taiping. Perak Government,—*Gazette*, Vol. VI, Nos. 18-25.
- Tokyo. Der Deutschen Gesellschaft für natur-und Völkerkunde Ostasiens in Tokio,—*Mittheilungen*, Band VI, Heft 51. * * *
- . Imperial University,—*Journal of the College of Science*, Vol. V, Part 4; Vol. VI, 2.
- Turin. La R. Accademia della Scienze di Torino,—*Atti*, Vol. XXVIII, Nos. 9-15.
- . ——. *Osservazioni Meteorologiche fatte nell' anno 1892 all' Osservatorio della R. Università di Torino*.
- Vienna. Der Anthropologischen Gesellschaft in Wien,—*Mittheilungen*, Band XXIII, Heft 2 und 3.

Vienna. Der K. K. Geologischen Reichsanstalt,—Verhandlungen, Nrn 6-10, 1893.

———. Der K. K. Zoologisch-Botanischen Gesellschaft in Wien,—Verhandlungen, Band XLIII, Nrn. 1 und 2.

Wellington. New Zealand Institute,—Transaction and Proceedings, Vol. XXV.

———. Polynesian Society,—Journal, Vol. II, No. 2.

Zürich. Der Naturforschenden Gesellschaft in Zürich,—Vierteljahrsschrift, Band XXXVIII, Nrn 1-2.

BOOKS AND PAMPHLETS,

presented by the Authors, Translators, &c

BURGESS, JAMES. The New Map of Persia. 8vo. Edinburgh, 1893.

GHOSHA, CHANDRA MOHANA. Chhandah Sāra Sangraha. 8vo. Calcutta, 1893.

MITRA, SARAT CHANDRA. Notes on two Behari Pastimes. 8vo. Bombay.

———. On a Wild Boy and a Wild Girl. 8vo. Bombay.

———. The Broadley Sculptures in the Indian Museum. 8vo. Bombay.

MITTACHIDES, N. ESSAY Is the Devil as black, as he is painted. 8vo. Calcutta, 1893.

———. India Unveiled. 8vo. Calcutta, 1893.

RAY, PRATÁPA CHANDRA. The Mahabharata, translated into English prose, Parts LXXXII and LXXXIII. 8vo. Calcutta, 1893.

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Report of the fourth meeting of the Australasian Association for the Advancement of Science, held at Hobart, Tasmania, in January 1892. Edited by A. Marton. 8vo. Sydney, 1893.

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Annual Report of the Trustees of the Australian Museum, New South Wales, Sydney, for the year 1892. Fep. Sydney, 1893.

AUSTRALIAN MUSEUM, NEW SOUTH WALES, SYDNEY.

CRUS, J. A. Van der. Dagh-Register gehonden int Easteel Batavia vant passerende daer ter plaetse als over geheel Nederlands—India.. Anno 1664. 8vo. Batavia, 1893.

———. Nederlandsch-Indisch Plakaatboek, 1602-1811, Deel XI (1788-1794). 8vo. Batavia, 1893.

BATAVIAASCH GENOOTSCHAP VAN KUNSTEN EN WETENSCHAPPEN.

CASPERSE, ARTHUR. *The Law of Estoppel in British India* (Tagore Law Lectures, 1893). 8vo. Calcutta, 1893.

CALCUTTA UNIVERSITY.

Report of the Library Syndicate of the Cambridge University for the year ending December 31st, 1892. 4to. Cambridge, 1892.

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Report on Education in the Central Provinces for the year 1892-93. Fcp. Nagpur, 1893.

Report on the Excise Revenue in the Central Provinces for the year 1892-93. Fcp. Nagpur, 1893.

Report on the Vaccine Operations in the Central Provinces for the year 1892-93. Fcp. Nagpur, 1893.

Report on the working of the Registration Department in the Central Provinces for the year 1892-93. Fcp. Nagpur, 1893.

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BAILEY, E. M. *A companion for the Queensland Student of Plant Life*. 8vo. Brisbane, 1893.

McCULLOCH, R. W. *Sericulture; or Silkworms, and how to rear them*. 8vo. Brisbane, 1893.

SHELTON, E. M. *Our Stock Foods, and how to use them*. 8vo. Brisbane, 1893.

DEPARTMENT OF AGRICULTURE, BRISBANE.

Report on the Government Horticultural Gardens, Lucknow, for the year ending 31st March 1893. Fcp. Lucknow, 1893.

GOVERNMENT HORTICULTURAL GARDENS, LUCKNOW.

Annual Report on Inland Emigration for the year 1892. Fcp. Calcutta, 1893.

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- . The Entomologist,—Vol XXVI, No. 362.
- . The Entomologist's Monthly Magazine,—Vol. IV (2nd Series),
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- . The Ibis,—Vol. V (6th Series), No. 19.
- . The Journal of Botany,—Vol. XXXI, No. 367.
- . The London, Edinburgh and Dublin Philosophical Magazine,—
Vol. XXXVI (5th Series), No. 218.
- . The Messenger of Mathematics,—Vol. XXII (New Series),
Nos. 11 and 12.
- . The Numismatic Chronicle,—Part I, 1893.
- . Numismatic Circular,—Nos. 9-11, 1893.
- . Quarterly Journal of Microscopical Science,—Vol. XXXV,
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- New Haven. The American Journal of Science,—Vol. XLV (3rd
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Tome CXVI, Nos. 22-26; CXVII, 1.
- . Annales de Chimie et de Physique,—6me Série, Tome XXIX,
Juin, 1893.
- . Revue Critique d' Histoire et de Littérature,—Tome XXXV,
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- . Revue Scientifique,—Tome LII, Nos. 4-16.
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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL,
FOR DECEMBER, 1893.

•The Monthly General Meeting of the Asiatic Society of Bengal was held on Wednesday, the 6th December, 1893, at 9 P.M.

•THE HON'BLE SIR C. A. ELLIOTT, K.C.S.I.
President, in the Chair.

The following Members were present :—

Dr. A. W. Alcock, T. D. Beighton, Esq., A. A. Casperez, Esq., Babu Gyanendra Kumar Rai Chaudhuri, Babu Sarat Chandra Das, B. Dé, Esq., G. A. Grierson, Esq., Dr. A. F. R. Hoernle, T. H. Holland, Esq., The Rev. H. B. Hyde, Dr. W. King, C. J. Lyall, Esq., C. Little, Esq., J. Mann, Esq., L. de Nicéville, Esq., S. E. Peal, Esq., A. Podler, Esq., Pandit Hara Prasad Shastri, C. R. Wilson, Esq.

Visitors :—H. Chintamon, Esq., H. V. Elliott, Esq., J. A. Hauxwell, Esq.

The minutes of the last meeting were read and confirmed.

Forty-four Presentations were announced, details of which are given in the Library List appended.

The following gentleman has expressed a wish to withdraw from the Society.

J. W. Oliver, Esq.

The PRESIDENT announced that Mr. G. A. Grierson had returned from leave and had taken charge of the Philological Secretaryship from Dr. A. F. R. Hoernle.

The PHILOLOGICAL SECRETARY exhibited a number of rubbings of inscriptions lately found by Captain Deane near Pesháwar. Some of them appear to be in a hitherto unidentified alphabet.

The original stones have been sent by the finder to M. Senart for decipherment.

MR. DE NICEVILLE exhibited a single male specimen of a very rare butterfly, *Charaxes kadenii*, Felder, captured in Sumatra. He received it from Hofrath Dr. L. Martin, of Deli, Sumatra, who possesses two other specimens caught also in the Battak Mountains, in the north-east of the island. It was described by Dr. Felder in the *Wien. Ent. Monatsch.* for 1861, from a specimen caught in Eastern Java by Dr. A. R. Wallace, and is roughly figured. A second and better woodcut of this unique example is given in Wallace's "*Malay Archipelago*," where he calls it the "Calliper Butterfly," from the peculiarity of the pair of tails present on each hindwing which converge at the tips, this being a feature unknown to a like extent in any other species in the genus.

The following papers were read:—

1. *A translation of the Inscription on the Chinese Stope lately dug out of St. John's Churchyard.*—By the REV. H. B. HYDE, M.A.

The paper will be published in the *Journal*, Part I.

2. The PHILOLOGICAL SECRETARY read a paper by Mr. H. Beveridge, I. C. S. (Retd.), on *The Site of Karna Suvarna.*

The Chinese Pilgrim Hiuen Tsiang visited a town in Bengal which he calls Kie-lo-no-su-fa-la-na, that is, being transliterated, Karna-suvarna. The site has not hitherto been satisfactorily identified, and has been conjecturally located in Birbhúm, in Singlbhúm, and quite recently by Dr. Waddell, in Burdwan. Mr. Beveridge's object is to prove that the place is probably identical with the town of Ráṅgámáti in the Murshidábád district.

We have two accounts of Hiuen Tsiang's travels,—that given by the Pilgrim himself, and that given in his 'Life' by the Shaman Yen Tsung. After dealing with discrepancies between these two accounts, Mr. Beveridge comes to the conclusion that the latter, in this case, is the more trustworthy of the two, and that it naturally takes the Pilgrim's itinerary through Ráṅgámáti.

The Pilgrim describes the kingdom of Karna-suvarna as having a circumference of about 900 miles and the capital as being about four miles round. The inhabitants were well off and had literary tastes, but they were a mixture of true believers (Buddhists), and heretics. By the side of the capital there was the monastery called Lo-to-wei-chi

(the name of which has been restored to *Rakta-viṭi*, (? *Raktamṛtīṭā*) or Redlands, of which the word *Rāṅgāmāṭi* is a literal translation. It is well known that *Rāṅgāmāṭi* (which is situated on the *Bhāgirathi* river about six miles above Berhampur), was once a great city. According to Lassen, it was formerly known as *Karṇa-suvarṇa-gaḍa*, and is said to have been so called because *Vibhishana*, the brother of *Rāvaṇa*, the demon king of Ceylon, visited the place on the occasion of the king's son's first meal of rice, and caused a shower of gold to fall on the land. Hiuen Tsiang gives a curious legend regarding the introduction of Buddhism into the kingdom.

Shortly before Hiuen Tsiang's time, the king of *Karṇa-suvarṇa* was the well-known *S'asāṅka*, who was so strongly opposed to Buddhism that he cut down the sacred Bodhi tree at *Bodh Gayā*. He died about the year 613 A. D., after having been overcome by *S'ilāditya* of *Kannauj*, in revenge for the murder of his brother and predecessor, *Rājavaradhana*. This king favoured Buddhism, and it was during his reign that the pilgrim visited the locality.

Mr. Beveridge gives strong reasons for believing that this *S'asāṅka* was the same as *S'asādharma* of *Abū'l Fazl*, who was the immediate successor of *Adiśūra* who brought *Brāhmins* from *Kannauj* to *Bengal*. This identification is most important, as it fixes *Adiśūra* as reigning in the early part of the 6th century A. D.

Finally there is a local tradition that *Karṇa-suvarṇa* was destroyed by an expedition from Ceylon, an event which Mr. Beveridge places as probably occurring about the 12th century A. D. It was the original home of the family of *Rāja Rādhā Kānta Deva*, the author of the *S'ubba-kalpa-druma*, whose ancestor *S'ri-hari-deva* possibly lived there before its destruction by the *Singhalese* invaders.

3. *A Bijāpur Inscription.*—By PROFESSOR F. KIELHORN, C. I. E., Göttingen. Communicated by the PHILOLOGICAL SECRETARY.

The paper will be published in the *Journal*, Part I.

4. *Notes on early local silver coinages in Northern India and in the Konkan.*—By W. THEOBALD, M. N. S. and R. A. S., London. Communicated by the PHILOLOGICAL SECRETARY.

(Abstract.)

This paper is principally devoted to a minute description of eighteen silver coins which had been presented to the author by the late General Sir A. Cunningham. They formed part of the articles recovered from the wreck of the steamer in which the archaeological treasures of the General had been lost beneath the waters of the Bay of Bengal. These

silver coins belong to a type of great antiquity and intermediate in character between the well-known "punch-marked" coins and those of a later date impressed by a single "die." They are square or polygonal or even rounded, and weigh on the average 26 grains. Some of them are quite blank on the reverse side, but mostly they are impressed with a varying number of symbols on both sides. The device on the obverse of eleven is made up of two principal symbols, and four or five smaller or accessory ones. Of the former, one is said to resemble a ninepin, placed horizontally. What this symbol is intended to represent, the author says he has not the faintest idea, but he suggests that it may represent a "dug-out" or "fishing canoe." The other clearly represents some quadruped, which, to judge from its head and tail, the author thinks must be a horse. Here the author incidentally corrects an error in one of his previous papers regarding the so-called "Coins of Kuninda." The animal represented on these coins is neither a "deer" nor a "yak," but a "buffalo." Two square coins, with blank reverses, entirely differ in their symbols from the rest. They are principally marked by a very obscure object, which the author suggests may possibly be intended for "a human hand lightly grasping a human ear," as shown on a gem from *Khorasan*. The concluding portion of the paper refers to certain ancient coins from the *Konkan*, described by Sir Walter Elliot in the *Numismata Orientalia*, and corrects some errors in that description. The author shows that these coins bear no "punch-marks," but are struck from a die, the principal device on which is the figure of a humped bull, surrounded by a number of minor symbols.

This paper will be published in Part I, of the *Journal*.

5. THE PHILOLOGICAL SECRETARY read a paper by Mr. W. Irvine, B. C. S. (Retd.), on an early translation into Hindústānī of the *Acts of the Apostles*. The paper was as follows:—

Reading Mr. Grierson's interesting paper "On the early Study of Indian Vernaculars in Europe" (*Journal*, Vol. LXII, Part I, pp. 41-52), has called to mind a little book, which I bought from a second-hand bookseller about a year ago. As Mr. Grierson does not mention it, although it seems to fall within the scope of his paper, it may be of interest to give a short description of this work. It is in 12 mo., 6½ inches × 4 inches, pp. 192, bound in full calf, with gilt edges. On the back are the letters

G.

N. J.

and on the side are stamped the words

A D

C. R. ACADEMIAM

LING : ORIENT :

1755.

On the inside of the guard and fly-leaves are various press marks in pencil : also, on the fly leaf at the end (as we should deem it), is written in ink, facing the vernacular title page,

Acta Apostolorum
in linguam Indostanicam

translata

a Benj. Schulsio

edidit

D. Jo. Henr. Callenbergius.

do lo cccxxxviii.

On the other side of the same leaf are the words, in pencil, *Ling. indostanica*, and on the inside of the guard, at the bottom, *Novum Testamentum*, 1758 (should be 1748 ?) *Hindustanice*. There is no imprint of any press, European or Native, and no title-page in any European language. As a substitute is a vernacular title-page in Persian character (printed from a wood block, I think), the letters of which are so twisted and distorted that it is difficult to decipher them. All that I can read for certain is *Hakikat ka kitāb*. As the pages are headed *Hakikat*, this must be the rendering of the word *Acts*. The book is in the Persian character and has been printed from type, somewhat similar in look to that still in use in Calcutta.

The language seems to be some form of dialect, possibly Dakhni. It is a very provincial jargon, as little like the Urdū of Dihlī or Lakhnaū as Chaucer thought "French of Stratford-atte-Bowe" was to that of Paris. It begins

Avval Fāzil.

1. *Tiā o fal I'shū'ā āpī samjhe so kāsūlānkon rūkh kadīs son farmāe so pichhe asmān po charkie so dīn lak karnekonbhī ta'līm denekon bhī shurū' kie so sabbke ūpar phailā mazkūr kiya nā.*

The end, verse 31 of chapter 28, reads as follows :—

*31. *Allahke malūkon zāhar karko manā nā hoko sūri himat son bhī khāwand heso I'shū'ā Mashi'oke lāik heso mazkūrān ta'līm dete the.*

5a. THE PHILOLOGICAL SECRETARY adds the following note :—

Schultz, the translator of the work mentioned by Mr. Irvine, has been already mentioned in my Essay above referred to. He corresponded with Bayer on the subject of the Lāntsha alphabet. In the year 1745, or four years before he published his translation of the Acts, he published the first grammar of the Hindústānī language. In 1748, the *Sprachmeister*, which owes much to his assistance, was

issued. He was a Madras Missionary, which fully accounts for the impure Hiudústání used by him. His work must, I think, rank as the earliest known translation of any portion of the Bible into an Indo-Aryan vernacular.

Callenberg's name occurs in LaCroze's *Thesaurus Epistolicus*. In the years 1724 and 1726 he was living at Halle, and corresponded with LaCroze, about Mongolian and the language of Greenland, of which a specimen is printed.* He was a friend of Gotthilf Franck, also of Halle, another learned man who interested himself in Oriental subjects and who obtained from the Danish Missionary Ziegenbalg, mentioned in my Essay,† a manuscript *History and Genealogy of the Gods of India*. I find this mentioned in a letter of LaCroze (to whom Franck had lent the MS.) to Bayor; written in the year 1717.‡ It would be interesting, to know if this is now in the Berlin Library.

6. *Natural History Notes from H. M. Indian Marine Survey Steamer 'Investigator,' Commander C. F. Oldham, R. N., commanding: Series II. No. 9. An account of the Deep Sea Collection made during the Season 1892-93.—By A. ALCOCK, Esq., M.B., C.M.Z.S., Superintendent of the Indian Museum.*

7. *On certain Indian Species of Canarium.—By GEORGE KING, Esq., M.B., F.R.S., C.I.E., Superintendent, Royal Botanic Garden, Sibpur.*

The papers will be published in the *Journal*, Part II.

LIBRARY.

The following additions have been made to the Library since the meeting held in November last:—

TRANSACTIONS, PROCEEDINGS, AND JOURNALS.

presented by the respective Societies and Editors.

Amsterdam. Der Koninklijke Akademie van Wetenschappen,—Jaarboek, 1892.

———. Verslagen en Mededeelingen, Afdeling Letterkunde, 3^{de} Reeks, Deel IX.

Register, 3^{de} Reeks, Deel I-IX.

Afdeling Natuurkunde, 3^{de} Reeks, Deel

IX.

Berlin. Der Königlich Preussischen Akademie der Wissenschaften zu Berlin,—Sitzungsberichte, I-XXV, 1893.

* L. C. I., 78.

† J. A. S. B., Vol. LXXII., p. 43.

‡ L. C. III., 39.

Bombay. *Bombay Natural History Society*,—*Journal*, Vol. VIII, No. 2.

———. *Indian Antiquary*,—Vol. XXII, Part 268.

Brisbane. *Queensland Branch of the Royal Geographical Society of Australasia*,—*Proceedings and Transactions*, 1892-93.

Brunswick. *Des Vereins für Naturwissenschaft zu Braunschweig*,—*Jahresbericht*, 1889-90 und 1890-91.

Brussels. *L'Académie Royale des Sciences, des Lettres et des Beaux-arts de Belgique*,—*Annuaire*, 1892 et 1893.

———. ———. *Bulletins*, 3^{me} Série, Tome XXII-XXV.

———. ———. *Mémoires*, Tome XLVIII et XLIX.

———. ———. *Mémoires Couronnés*, Tome XLVI.

———. ———. *Mémoires Couronnés et Mémoires des Savants Etrangers*, Tome LII.

———. *La Société Malacologique de Belgique*,—*Annales*, Tome V, No. 2.

———. *La Société Royale Malacologique de Belgique*,—*Annales*, Tome XXVI.

———. ———. *Procès-Verbaux des Séances*, 5 Juillet 1891-3 Septembre 1892.

Calcutta. *Indian Engineering*,—Vol. XIV, Nos. 24-27.

———. *Maha-Bodhi Society*,—*Journal*, Vol. II, No. 6.

———. *Photographic Society of India*,—*Journal*, Vol. VI, Nos. 11 and 12.

Chicago. *The American Antiquarian and Oriental Journal*,—Vol. XV, No. 5.

Dublin. *Royal Irish Academy*,—*Proceedings*, Vol. II (3^d Series), Nos. 4 and 5.

Florence. *La Società Italiana di Antropologia, Etnologia e Psicologia Comparata*,—*Archivio per L'Antropologia o la Etnologia*, Vol. XXIII, No. 1.

Frankfurt, A. M. *Der Senckenbergischen Naturforschenden Gesellschaft*,—*Abhandlungen*, Band XVIII, Nr. 1.

———. ———. *Bericht*, 1893.

The Hague. *Koninklijk Instituut voor de Taal,-Land-en Volkenkunde van Nederlandsch-Indië*,—*Bijdragen tot de Taal,-Land-en Volkenkunde van Nederlandsch-Indië*, 5^e Volgr, Deel VIII, Aflevering 4.

Hamburg. *Naturhistorischen Museum in Hamburg*,—*Mitteilungen*, Jahrg X, Heft 2.

Havre. *Société de Géographie Commerciale du Havre*,—*Bulletin*, Juillet-Août, 1893.

Helsingfors. *Finska Vetenskaps-Societeten*,—*Bidrag*, Heft 51.

———. ———. *Ofversigt*, 1891-92.

Leipzig. Der Deutschen Morgenländischen Gesellschaft,—Zeitschrift, Band XLVII, Heft 3.

———. Der Königlich Sächsischen Gesellschaft der Wissenschaften zu Leipzig,—Berichte, Math-Phys. Classe, 4-6, 1893.

Liège. La Société Géologique de Belgique,—Annales, Tome XX, No. 1, London. The Academy,—Nos. 1120-24.

———. Anthropological Institute of Great Britain and Ireland,—Journal, Vol. XXIII, No. 1; and Index, 1843-91.

———. The Athenæum,—Nos. 3443-47.

———. Geological Society,—Quarterly Journal, Vol. XLIX, Part 4; and List of Members corrected to 1st November 1893.

———. Institution of Civil Engineers,—Minutes of Proceedings, Vols. CXIII and CXIV; and Brief Subject-Index, Vols. LIX to CXIV.

———. Nature,—Vol. XLVIII, Nos. 1251-55.

———. Linnean Society,—Journal, Botany, Vol. XXIX, Nos. 202-204.

———. ———. Zoology, Vol. XXIV, Nos. 152-154.

———. ———. Transactions, Botany, Vol. III (2nd Series) Part 8.

———. ———. Zoology, Vol. V (2nd Series), Parts 8-10.

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———. Royal Asiatic Society of Great Britain and Ireland,—Journal, Vol. XXV, No. 4.

———. Royal Astronomical Society,—Monthly Notices, Vol. LIII, No. 9.

———. Royal Geographical Society,—Geographical Journal, Vol. II, No. 5.

———. Royal Microscopical Society,—Journal, Part 4, 1893.

———. Royal Society of London,—Philosophical Transactions, Vol. CLXXXIII, A and B.; and Member List corrected to 30th November 1892.

———. Royal Statistical Society,—Journal, Vol. LVI, Part 3.

———. Zoological Society of London,—Proceedings, Parts II and III, 1893.

———. ———. Transactions, Vol. XIII, Part 7.

Mexico. La Sociedad Científica "Antonio Alzate,"—Memorias y Revista, Tome VI, Nos. 11 et 12; VII, 1-2.

Munich. Der Königlich Bayerischen Akademie der Wissenschaften,—Abhandlungen, Cl. III, Band XX, Abth. 2.

Mussoorie. The Indian Forester,—Vol. XIX, No. 11.

Paris. Journal Asiatique,—IX^e Série, Tome I, No. 3; II, 1.

———. La Société de Géographie,—Bulletin, Tome XIV, No. 2.

Rome. La Società Degli Spettroscopisti Italiani,—Memorie, Vol. XXII, No. 8.

- Stuttgart. Des Vereins für vaterländische Naturkunde in Württemberg,—Jahreshefte, Jahrg. XLIX,
 St. Petersburg. L'Académie Imperiale des Sciences de St. Petersburg,—Mémoires, Tome XL, Nos. 2 ; XLI, 1.
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PROCEEDING
OF THE
ASIATIC SOCIETY OF BENGAL.

No. I.—1893.

*The Weber MSS—Another collection of ancient manuscripts from
Central Asia—By DR A F RUDOLF HOEBEL.*

(With four Plates)

In July last I received from the Reverend F. Weber, Moravian Missionary in Leh in Ladak, a small packet, containing ancient manuscripts

Regarding the circumstances under which the manuscripts were discovered, and given to Mr Weber, the latter in two letters, dated the 21st June and 29th July last, gives me the following information. They were found in the neighbourhood of a place called Kugiai, in a "house" which, apparently, since times immemorial had been ruined and buried. An Afghan merchant, hoping to discover buried treasure, with much trouble undertook the excavation of the "house." He found, however, only the bodies of some "cows," which on the first contact crumbled into dust. At the same time he found also the manuscripts. As Mr. Weber is known to the people to be a collector of Tibetan curiosities, the manuscripts were taken to him by a person who had received them from the finder. He was also shown an "Urdû" letter from the latter, giving the above account of his exploration, but not knowing "Urdû," Mr. Weber could not read the letter himself.

It would have been satisfactory to learn something more accurate about the identity of the so-called "house" in which, and the "cows"

with which the manuscripts are said to have been found. But, on enquiry, Mr. Weber wrote me that he was unable to obtain any further information.

The place Kugiar will be found on any good map of Central Asia at $77^{\circ} 12'$ long. and $37^{\circ} 25'$ lat., about 60 miles south of Yarkand, at an altitude of 6450'. A straight line, drawn from Leh to Yarkand, very nearly passes through Kugiar; it is a little to the left of that line, and lies just within the borders of the Chinese territory.

I found the manuscripts enclosed, after the fashion of Indian manuscripts, between two pieces of wooden boards. These are of unequal size, one measuring $9\frac{1}{2}$ by $2\frac{3}{4}$ inches, the other $7\frac{1}{4}$ by $2\frac{1}{2}$ inches. They are, each, pierced by one hole, which is not in the middle of the board, but towards one side; in the larger board it is at a distance of $2\frac{1}{2}''$, in the smaller at $1\frac{1}{2}''$, from its narrow margin. Corresponding holes, on one side only, are in all the leaves of the manuscripts. This one-sided position of the string-hole is also observable in the Bower Manuscripts, and it appears to be a peculiarity of Central Asian manuscripts. I do not remember ever having observed it in any Indian manuscript. These have either one string-hole in the middle of the leaf, or they have two holes, one toward either narrow margin. Facsimiles of leaves with one hole are given in Dr. Mitra's *Sanskrit Notices*, and such of leaves with two holes, in Mr. Bendall's Catalogue of *Buddhist Sanskrit MSS.* The famous Horiuzi Manuscript, which originally came from India, has two holes, as may be seen from the facsimiles published by Prof. Bühler in the *Anecdota Oxoniensia*, Vol. I, Part III. On the other hand, the facsimile of the Central Asian manuscript, published by Mr. S. Oldenburg, in the *Records of the Oriental Transactions of the Imperial Russian Archaeological Society*, Vol. VII, p. 81, 82, shows the peculiar one-sided hole. This practice of using an one-sided hole, therefore, would seem to be a mark by which a manuscript may be distinguished as coming from Central Asia. Another point to be noted is, that, like the Bower MSS., the Weber Manuscripts also are of the oblong shape, usual to Indian manuscripts, as distinguished from the square shaped Kashmirian. The square shape, indeed, appears to be an exceptional peculiarity of the Kashmirian manuscripts. All others, Indian, Nepalese, Tibetan and Central Asian are of an oblong shape.

On examining the Weber Manuscripts, I found that they formed a collection of fragments of nine (or possibly eleven) different manuscripts.

These are fragmentary in two ways. In the first place, not one of them is complete, a more or less large number of leaves being wanting both at the beginning and at the end. Secondly, every leaf is mutilated on the right or left or on both sides. On the other hand, they are, as a

rule, perfect at the top and bottom. The following is a list of leaves of the several parts composing the manuscripts:—

Part I, consisting of 9 leaves.

"	II	"	"	7	"
"	III	"	"	6	"
"	IV	"	"	1	"
"	V	"	"	8	"
"	VI	"	"	5	"
"	VII	"	"	7	"
"	VIII	"	"	8	"
"	IX	"	"	25	"

—
Nine Parts consisting of 76 leaves.





All the nine manuscripts are written on paper. Their paper is of differing qualities. In the main there are two kinds: one kind is thick, soft, flexible and white; it is so soft indeed, that its surface is apt to fret, and thus to injure the writing. The other kind is thin, hard and stiff, and of a more or less brownish colour. No. IX (Central Asian) has the softest and whitest texture. Also soft, but less white is the paper of Nos. 1 and 2 (Indian) and Nos. 6 and 7 (Central Asian). Harder and darker is the paper of Nos. 3 and 4 (Indian) and No. 5 (Central Asian). Distinctly hard and brown is the paper of No. VIII (Central Asian). The manuscripts, written in Central Asian characters, therefore, are inscribed on paper of the greatest variety, from the whitest and softest to the stiffest and darkest.








The paper, by appearance and touch, appears to me to be of the kind, commonly known as Nepalese, which is manufactured from several varieties of the *Daphne* plant. Dr George King, the Director of the Botanical Gardens, has been good enough to examine the paper, and agrees with me that probably it is paper "made of the fibres of *Daphne papyracea*, or of *Edgeworthia Gardneri*, which are still used as raw material for paper-making in the Himalayas." The better description of paper is made of fibres of *Edgeworthia Gardneri*. A very full account of this so-called Nepalese paper, its material and manufacture, will be found in Dr. Watt's *Dictionary of Economic Products of India*, Vol. III, p. 19, where also references to other sources of information are given.

For the purpose of being inscribed this paper appears to have been specially prepared with some kind of sizing, probably made of white arsenic. On the leaves of some of the manuscripts this size forms a thick glazed coat on which the letters are traced. Occasionally this glazed coat has peeled off, in which case the letters which it bore have disappeared with it. This is particularly the case with Part V, and may

be seen on Plate II, fig. 1. In the case of Part IX, the cost is apparently under the influence of damp, has caused the leaves to stick together, and thus extensive damage has been done, as may be seen from figures 3-5 on Plate III.

A very striking peculiarity of the Weber Manuscripts is, that they are written in two quite distinct types of written characters. One of them—that in which Parts I, II, III and IV are written—is the well-known Indian character of the North-Western Gupta variety, being the same type (though a different sub-variety) as that used in the Bower MSS. This type of character is sufficiently well-known, and I need not say anything more about it here.

The other type of characters, used in Parts V-IX, is what I may call the Central Asian Nāgarī. It is a peculiar angular and slanting form of the Indian Nāgarī characters. On the whole the several Parts exhibit these characters in a variety of handwritings, though the essential type of the characters is the same. There is, however, a distinct variety, not merely of handwriting, but of type, noticeable between the characters used in Parts V-VIII and in Part IX. The test letters are the dental *th* and *dh*. In Part IX their shape is angular and squarish,  *th* and  *dh*, while in Parts V-VIII it is round,  *th* and  *dh*. (See Plate IV.) For the purpose of comparing these two varieties of the Central Asian Nāgarī, Parts VII and IX (Plate II, fig. 6 and Plate III, figs. 3-5) are the best, because in their general style of handwriting they most nearly resemble one another. In the sequel, I shall refer to these two varieties as the round and the square varieties of the Central Asian Nāgarī.

I may here refer to a few other peculiarities of the Central Asian alphabet. Firstly, the curious form of the super-scribed vowel *ē*, with its curve turned to the right. Secondly, the curious form of the letter *m*. I have observed this form, in a few rare cases, on gold coins of Samudra Gupta. It has, clearly, grown out of the angular Indo-Scythian form of *m*; and its origination would fall in the early time of the Gupta period (Samudra Gupta 380-395 A.D.). The series of changes would be these , , , , all of these forms being represented on Gupta coins, and the last being the parent of the Central Asian form. Thirdly, the curious resemblance between the forms of  and . They can only be distinguished by the fact, that the right-hand angle of  is more decidedly acute-angled. Fourthly, the curious symbol of a double dot over letters,—in fact a double anusvara. It may be seen frequently in Mr. Oldenburg's Kashgar manuscript. In the Weber Manuscripts, it occurs only in Part IX, which, as above remarked, is distinguished by being written in the square variety of the Central Asian Nāgarī.

however, much the mark of a particular variety of characters, as of a particular language, and its exact power I do not know. Part IX is not written in Sanskrit, nor have I met with the double dot in any Sanskrit text, except once.* On the smaller of the two wooden boards, three lines are inscribed in Central Asian characters. The board probably belongs to the work contained in Part VII, which treats of a Buddhist charm, the lines are written in Sanskrit and run as follows:—

[*namô*—*vidyâdharasya*—*dukshinî hasti*—*mañi dhārayitavyam*—*api cha*
[*pūrṇa*—]*rātr-ôvavastîna*—*suci-sudîna*—*su-vas̥tra-prâritîna sādhaivya*
[.]*ê siddhi*]

The words in brackets are broken off and have been conjecturally supplied. The meaning is: "Salutation to the Vidyâdhara! Let the jewel be placed in the right hand; then having fasted the whole night, washed clean, and put on fresh garments, success will be secured by me."¹

Here there is the double anusvâra over the akshara *vi* of *prâritîna*. But what it is there intended to signify, I do not know. In Part IX, it is occasionally found on Sanskrit words, thus *mañchamśṭham*, which is a mis-spelling for *mañjishṭhâ*. Here it may possibly mark a modification in the sound of the vowels; but its real power is obscure.

I add a table of the Central Asian alphabet, showing the forms of single as well as compound letters. See Plate IV. They are nearly all excerpted from the leaves shown in my Plates I to III. In this table are also shown the ancient numeral figures. They are found in several of the manuscripts; viz, Parts I, II, IV, VI.

The Central Asian Nâgari has a curious resemblance to the so-called "Wartu" characters of the Tibetans. In this Journal, for 1888, Vol. LVII, will be found two plates (I and II) showing these "Wartu" characters. It belongs to a paper, published by Bâbû S. C. Das, on *the Sacred and Ornamental Characters of Tibet* (*ibid.*, p. 41). The resemblance, however, is still more striking to certain characters, shown on Plate I, in the *Asiatic Researches*, Vol. XVI (for 1828), and there designated respectively as *Khuchulce*, *Gramtsodce*, *Sindoohee*, and *Pookangkeo*. The plate seems to have been prepared by Mr. Hodgson from "a vast number of manuscripts, great and small fragments," as specimens of "*Bhotiya*" (i. e., Tibetan) penmanship.²

¹ Perhaps *sādhaivishyati* should be read for *sādhaivrya* [.]^ê, or *sādhaivtaryâ mē*. With *usavastîna* compare the Pâli *upavuttha*.

² The letters on the Plate would seem to be intended for facsimiles, but the accuracy of the copy is not above suspicion. There are certainly some obvious mistakes in the identification of the letters; thus the third group (from the left) in the last line is not *p*, *ph*, *b*, *bh*, *m*, but *t*, *th*, *d*, *dh*, *n*. Again the third letter in the third line is not *ya*, but *pa*.

The Tibetan tradition with regard to the "Wartu" characters is rather uncertain. In the paper, above referred to, Bâbû S. C. Das says, that the "Wartu" characters were introduced into Tibet by Sambhoṭa (or Thon-mi, the son of Anu) from Magadha in North-Eastern India, about 630-650 A. D. Since then he has been re-examining the traditions of Tibet on this point, and he now informs me that the "Wartu" characters were rather introduced from the North-Western extremity of India, namely from Kāshmir, called in Tibetan *Kha-che*. He has supplied me with the following passage from the Bu-ston Chos byuñ (fl. 138): "He (i. e., King Srong Tsan Gampo, 630 A. D.) ascended the throne at the age of 18. He brought the border chieftains under subjection. He made presents to them, (and) read letters (sent by them). Before that (time) there was no written language in Tibet. He sent Thon-mi, son of Anu, with sixteen attendants to learn the letters. He learnt from Pandit Deva-vid Simha the Śabda Vidyâ. He designed 30 letters, adapting them to the Tibetan language. He based the four fundamental vowels, called *Āli*, (i. e., i, e, o, u) on *a*. In form these letters (vowels and consonants) resembled the characters of *Kha-che*. This was done at the fort of Maru in Lhasa. He wrote eight grammatical works on the orthography and syntax of the Tibetan Grammar." The Bâbû also informs me, that in later days the country of Liyul or Khoten was included in the general name of *Khache*; and further that the letters which were brought from India, through Nepal, were the so-called Lantsha (see Plate VIII in Journal, vol. LVII), introduced in the reign of Thisroñ Deu-tsan.

Here the following points may be noted: In the first place, the 34 original letters of Tibet (i. e., 29 consonants and 5 vowels) elaborated by Sambhoṭa, are shown on Plate II(a) in Bâbû S. Ch. Das' paper. They are the so-called *U-chan* or "headed" characters. It will be noticed that among them "the four fundamental vowels" are certainly adaptations of the form of the vowel *a*. This, so far, bears out the tradition above quoted from the Bustan. But, for the rest, the letters show no particular resemblance to the "Wartu" or "Khache" characters, any more than to any other Indian system of writing (e. g., the Gupta or Lantsha.) Possibly this may be put down to the fact, that Sambhoṭa may have modified the shapes of the letters he adopted; or it may be due to subsequent alterations, the table not showing the exact shape the letters received at the hands of Sambhoṭa, but such as they assumed in the course of time.

But, secondly, it is noteworthy that the letter *y* in Sambhoṭa's alphabet shows the ancient tri-dentate shape of that letter. In the table of "Wartu" characters, on the other hand, that letter shows its

modern (square) form. It is clear, therefore, that the "Wartu" letters, from which Sambhoṭa copied his own, cannot have been precisely the same as those exhibited in Bâbû S. Ch. Das' table. Now there is an unmistakable similarity of the letters shown in the table of the *Asiatic Researches*, on the one hand, with the Bâbû's "Wartu" characters, and on the other, with the Central Asian characters in the Weber Manuscripts. In the table there is a series of *Khachechee* letters, that is, clearly, letters of *Khache* (Central Asia.) These, therefore, should be the letters, from which Sambhoṭa adapted his alphabet. And, as a matter of fact, it will be found that the letter *y* shows in that table its old tri-dentate form. But further, in that table the letter *y* appears in three different forms: first, in the distinctly tri-dentate form (**W**) in the second line, then in an intermediate bi-annulate form (**W**) in the third line, and lastly in the (practically) modern square form in the fourth line. The last of these three forms, the modern one, is never found in any portion of our manuscripts. The form in which it is usually occurs in them, is the intermediate, bi-annulate one. In the most ancient tri-dentate form it only occurs, optionally, in Part V of the Weber Manuscripts. With regard to the Tibetan alphabet, the evidence seems to point to this conclusion, that Sâmbhoṭa had before him a "Khache" alphabet, similar to those shown in the Plate of the *Asiatic Researches*, but sufficiently ancient, to still show uniformly the ancient tri-dentate form of the letter *y*, which, in its turn, explains the presence of that ancient form in the current Tibetan alphabet. The characters he had before him may have been something similar to those seen in Part V of the Weber Manuscripts. On the other hand, the "Wartu" letters, shown in Bâbû S. C. Das' plate had for their prototype a somewhat later "Khache" alphabet,—one which had already adopted the modern square form of the letter *y*.

The whole of the Weber Manuscripts are written in the Sanskrit language, of more or less grammatical purity, except Part IX. This is written in the square variety of the Central Asian Nāgarī, and in a language which to me is unintelligible. The strange ligatures that occur in it, such as *lkkh*, *tts*, *yl*, *shsh*, *pts*, *bhb*, *ññ*, *ys*, etc., are foreign to Sanskrit or any Sanskritic language that I know of; yet undoubted Sanskrit words do occur numerously interspersed in the text. Such are *śvakaṇḍa* and *śvagaṇḍha*, *śirisha* (Skr. *śirīsha*)-*pushpa*, *priyaṅgu*, *punarnava*, *mañchaṁślihaṁ* (Skr. *mañjishṭhā*), *sārava* (Skr. *śārivā*), *mēḍha* and *mahāmēḍha* (Skr. *mēḍa* and *mahāmēḍa*), *prapūṇḍarikha* or *prapūṇṭarikha* (both spellings occur for Skr. *prapaṇḍarika*), *kaṭu-rōkhiṇī*, *kākōrī* and *kshīra-kākōrī*, *dēvadāru*, etc. It will be noticed that most of the names are not correctly spelled; unaspirates being ex-

changed with aspirates, sonants with surds, cerebrals with dentals, etc. But there can be no shadow of doubt as to the identity of the words. They are Sanskrit names of medicinal plants. I have not yet been able to give to the subject any thorough examination, but I suspect that we have in Part IX a medical treatise written in some Mongolian (Tibetan) or Turkî language, treating of Indian medicine, and hence using Sanskrit medical terms.

The curious circumstance, however, with regard to this Part IX is that, both with reference to the characters (square variety) and the language, it clearly belongs to the same class of manuscripts as the Kashgar MS., published by Mr. Oldenburg. Of the latter manuscript I shall give some account at the end of this paper.

On the age of the Weber MSS., I am not able to give such a definite opinion as on that of the Bower MSS., though I am not disposed to believe that any portion of it can be referred to a date later than the 7th century A. D. In the Indian portions of the manuscript (Parts I to IV) no other than the old tri-dentate form of *y* ever occurs. On this ground these portions should be of the same date as the Bower MSS., i. e., belong to the 5th century A. D. In some points they are even more antique than the Bower MSS. Thus the compound *r*, preceding another consonant, is uniformly written level with the line of writing (never above it, like the vowel marks). The consonant *p* has also preserved a more ancient shape.

The Central Asian portions of the Weber Manuscripts show occasionally in Part V, the old tri-dentate form **W** of *y*, and otherwise throughout the intermediate bi-annulate form **W**. No trace of the modern square form is seen anywhere. I call the bi-annulate form "intermediate," not because it presents a stage of development intermediate between the old tri-dentate and the modern square forms, but simply because it is clearly a "current" form grown out of the older tri-dentate. It seems to me doubtful whether it was ever superseded by the later Indian "current" square form. On the other hand, it is so easily formed out of the older tri-dentate form, that it may have been and probably was nearly contemporaneous with it. I am disposed to believe, that the Gupta *ya* (the old tri-dentate form) as it was carried from Kashmîr into the more northern and north-eastern parts (Kashgar, Yarkand, Khoten) of Central Asia, assumed and always retained the bi-annulate form, while in the more south-eastern parts (Western Tibet) it retained at first its tri-dentate form and was afterwards gradually changed into the modern (Indian) square form. When Sambhoṭa went to "Khache" (Central Asia, i. e. Kashmîr, Liyul, Khotan) to bring thence the letters in 630-650 A. D., he evidently found the tri-dentate form in use in the particular

part of the country which he visited. Towards the end of the 7th century and early in the 8th, Central Asia was overrun by the Muhammadan armies of the *Khulifat*, and this put an end to the Sanskrit culture of those regions. Hence our Central Asian manuscripts which still show evidences of a distinct Sanskrit culture cannot well be placed after that date.

I now proceed to describe the several parts of the Weber MSS. in detail:—

Part I. (See Plate I, fig. 1.) There are nine leaves, mutilated on the right-hand side. They measure $7\frac{1}{2}$ by $2\frac{3}{4}$ inches, and have eight lines to the page, excepting the obverse of the 14th leaf, which has 9 lines. The leaves are consecutively numbered, from 7 to 15, in the old style of figures. The first six leaves and those after the fifteenth are wanting. The obverse of the 15th leaf is shown in Plate I, fig. 1. The number 15 (*i. e.*, the figure for 10, and below it the figure for 5) is seen on the left-hand margin. The page reads as follows:—

- 1, चचं चतुस्तारं गजविक्रमसंस्थितं पञ्चत्वारिंशसुहृत्संयोगं मधुसाहस्रं वैश्वदेवतं मङ्ग
- 2, • जिनचचं चितारं गोशेषसंस्थितं सप्तसुहृत्संयोगं वायुक्रसाहस्रं ब्रह्मायनौगोत्रेण ॥ ॥
- 3, वमहासंस्थितं त्रिंशसुहृत्संयोगं पक्षिमासाहस्रं विष्णुदेवतं ब्रह्मावर्णीगोत्रेण ॥ इतो
- 4, पश्चिमद्वारौकानि नचचाणि ॥ धनिष्ठानचचं चतुस्तारं शकुनसंस्थितं त्रिंश-
ॐ [सुहृत्संयोगं]
- 5, वतं कत्याय गोत्रेण ॥ इतमिषा नचचं एकतारं तिलकसंस्थितं पञ्च-
नौ [दशसुहृत्संयोगं]
- 6, देवतं ताण्डायनौगोत्रेण ॥ पूर्वभद्रपदा नचचं द्वितारं पताकसंस्थितं त्रिंशमङ्ग
- 7, आभिष्टुतिदेवतं आतुकर्णीगोत्रेण ॥ उत्तरभद्रपदा नचचं द्वितारं पताकसंस्थितं
- 8, गोमासाहस्रं आर्यमाकल्पदेवतं द्विरण्यायनौगोत्रेण ॥ रेवती नचचं एक

In the following Roman transliteration I have added, in straight brackets and italics, the missing portions, so far as it is possible to deduce them from the context and other parts of the manuscript. It will be seen that from 9 to 11 aksharas are missing in each line, which would occupy nearly two inches of the leaf. The original size of the leaf, therefore, must have been $9\frac{1}{2}$ by $2\frac{3}{4}$ inches, that is, exactly the size of the larger of the two wooden boards. This circumstance would seem to prove that the larger board was one of the two covers of this particular manuscript.

- 1, kshatram chatus-taram gaja-vikrama-samsthitam pancha-chatvâ-
ri[m]śu-muhūrta-yôgam madhu-lâj-âharam Vaisya-daivata[m]
M[au]dga[lâyani-gôtrêna 19 ॥ Abhi-]
- 2, ji nakshatram tri-taram gô-sirsha-samsthitam sapta-muhūrta-yôgam

- vāya-kṛakṣh-āhāraṁ Brahmāyaṇi-gôtrēṇa 20 || Śra[vaṇô naksh-
atram tri-tāram yu-]
- 3, va-maddhya-saṁsthitam triṁśa-muhūrta-yōgam pakshi-māms-āhā-
ram Vikṣṇu-dēvatam Brahmavarṇi-gôtrēṇa 21 || It=i[māni bhô
Pushkarasâri sapta]
- 4, pascima-dvârikâni nakshatrâṇi || Dhanishṭhâ nakshatram chatus-
tāram śaknu-saṁsthitam triṁśa-muhūrta-yōgam [. . .-āhāram
Vāsava-dai-]
- 15 vataṁ Katyāyaṇi-gôtrēṇa 22 || Satabhishâ nakshatram ēka-tāram
tilaka-saṁsthitam pañchadaśa-muhūrta-[yōgam . . . -āhāram
Varuṇa-]
- 6, daivatam Tāṇḍāyaṇi-gôtrēṇa 23 || Pūrva-bhadrāpadâ nakshatram
dvi-tāram patākâ-saṁsthitam triṁśa-m[n]h[ārtā-yōgam
āhāram]
- 7, Âbhivṛddhi-daivatam Jâtukarṇi-gôtrēṇa 24 || Uttara-bhadrāpadâ
nakshatram dvi-tāram patākâ-saṁsthitam[n pañcha-chatvârīṁśa-
muhūrta-yōgam]
- 8, gô-māms-āhāram Āryam-ākālpa-daivatam Hiranyāyaṇi-gôtrēṇa 25 ||
Rêvati nakshatram ēka[-tāram . . .-saṁsthitam triṁśa-muhūrta-]

Fifteenth Leaf : Reverse.

- 1, yōgam guḍa-kamsâr-bhōjanam³ Pushya-daivatam Bhārgavân-gô-
trēṇa 26 || Āsvini nakshatram tri-tāram[n . . -saṁsthitam triṁśa-
muhūrta-yōgam ya-]
- 2, kṛin-māmsa-bhōjanam Gandharva-daivatam Āsvāyaṇi-gôtrēṇa 27 ||
Bharāṇi nakshatram tri-tāram bhaga-saṁ[sthitam triṁśa-mu-
hūrta-yōgam]
- 3, taṇḍul-āhāram Yama-daivatam (arthavam)⁴ Bhārgavi-gôtrēṇa 28 ||
It=iṁāni bhô Pushkarasârin=supt=ôttara-dv[ârikâni nakshatrâṇi ||
Ity=iśhân]
- 4, bhô Pushkarasârin ashtâ-viṁśatinâm nakshatrâṇâm katamâni nak-
shatrâṇi pañcha-chatvârīṁśa-muhû[rtâni śat tad-yathâ Rôhini
Punarva-]
- 5, suh uttarâ Phalguni Viśākhâ uttar=Āshāḍhâ uttarâ Bhadrāpadâ —
pañcha nakshatrâṇi pañcha[daśa-muhūrtâni tad=yathâ Ārdrâ]
- 6, Āślêṣhâ Svâti Jyêṣṭhâ Satabhishâ ēkā Abhiji ashtau muhūrta
śêṣhâni triṁśa-muhūrtâni nakshatr[âṇi pūrva-dvârikânâm]

³ This was the original reading; by the interlinear insertion of the akshara *hâ* it is now changed to *guḍa-kams-âhâra-bhōjanam*.

⁴ This word is inserted interlinearly, with a mark indicating the proper place where it should be read in the line.

- 7, nakshatrāṇām Kīrtikā pūrvam Aślēshā paschimā dakṣiṇa-dvārikā-
nām nakshatrāṇām Maghā pūrvam Viśākhā paschi[ma] paschi-
ma-dvārikānām na-]
8, kshatrāṇām Anurādhā pūrvam Śravanah paschimah uttara-dvārikā-
nām nakshatrāṇām Dhanishṭhā pūrvam paschimā Bha[raṇi] . . .
. . .]

I may add the remainder of the remarks on the nakshatras from the preceding leaves 13 and 14:—

Thirteenth Leaf: Reverse.

- 1, katamē Vātsā Brāhma-chāraṇah Chhandōgā katī Chhandōgānām
bhêdāḥ śhaṭ katamē tad=yathā gôdhû[.]
2 kapimjalôyā atyāsanam=iti kim-gôtrī mâtā Pārâśari—paṭhati bhavān=
nakshatra-vaṁśam=atha kim katha[yatu mē tad=yathā Kīrtikā 1]
3, Rôhiṇī 2 Mṛigaśīrṣah 3 Ārdhrā 4 Punarvasuh 5 Pushyuh 6 Aślēshā
• 7 Maghā 8 Pūrva-phalguni[ne 9 Uttara-phalguni 10 Hastah]
4, 11 Chitrā 12 Svātīh 13 Aśākhā (sic) 14 Anurādhā 15 Jyêshṭhā 16
Mūlah 17 Pūrvāshādhā [18 Uttarāshādhā 19 Abhijī]
5, 20 Śravanah 21 Dhanishṭhā 22 Śatabhishā 23 Pūrva-bhadrpadā
24 Uttarā-bhadrpadā 25 Rê[vaṭi 26 Āśvinī 27 Bhara-]
6, nī 28 ity=êṭāny=ashtāvīmśati nakshatratrāṇi kati-tārāṇi kim-samsthā-
nāni kati-muhūrtāni kim-gôṭtrāṇi ki[m-bhōjanāni kim-]
7, daivatāni—Kīrtikā nakshatram śhaṭ-tāram kshura-samsthānam
triṁśa-muhūrta-yōgam dadhi-āhāram Agni-daivatam=Agni[ec-
śya-gôṭrēṇa 1 || Rôhi-]
8, nī nakshatram pañcha-tāram śakāṭ-ôddhi-samsthānam pañcha-cha-
tvārimśa-muhūrta-yōgam vṛisha-matsya-bhōjanam prujā[pati-
daivatam . . . -gôṭrēṇa 2 ||]

Fourteenth Leaf: Obverse.

- 1, Mṛigaśīrasam nakshatram tri-tāram mṛiga-śīrsha-samsthitam
triṁśa-muhūrta-yōgam mṛiga-matsya-bhōjanam Sôma-d[ai]va-
ta[m -gôṭrēṇa 3 || Ārdhrā na-]
2, kshatram êka-tāram tilaka-samsthitam pañchadaśa-muhūrta-yōgam
navanit-āhāram Rudra-daivatam Hāritāyana-gô[ṭrēṇa 4 || Punar-
vasur=nakshatram]
3, dvi-tāram patākā-samsthitam pañcha-chatvārimśa-yōgam sarpi-
maṇḍ-āhāram Āditya-daivatam Vasishṭha-gôṭrē[ṇa 5 || Pushyô
nakshatram tri-tā-]
4, ram vardhamāna-samsthitam triṁśa-muhūrta-yōgam madhv-āhā-
ram Bṛihaspati-daivatam Alabanēyavi-gôṭrē[ṇa 6 || Aślēshā nak-
shatram paṇi-]

- 5, chu-tāram akāsa-patākā-samsthitam pañchadaśa-muhūrta-yōgam matsa-yakṛi-bhōjanam sarpi-dai[*ratam . . . -gōtrēṇa 7 || I-*]
- 6, t=imāni bhō Pushkarasāri sapta pūrva-dvārikāni nakshatrāṇi || Maghā nakshatram pañcha-tāram nadi-kramja-samsthi[*tam trimśa-muhūrta-yōgam . . -*]
- 7, bhōjanam Pitri-dēvatam Pingāyani-gōtrēṇa 8 || Pūrva-phalguni nakshatram dvi-tāram patākā-samsthitam [trimśa-muhūrta-yōgam . . -*āhāram*]
- 8, Bhaga-daivatam Gōtama-gōtrēṇa 9 || Uttarā phalguni nakshatram dvi-tāram patākā-samsthitam pañcha-chatvārim[*śa-muhūrta-yōgam . . -āhāram*]

Fourteenth Leaf: Reverse.

- 1, Ārya-daivatam Kausiki-gōtrēṇa 10 || Hastō nakshatram hasta-samsthitam pañcha-tāram trimśa-muhūrta-yōga[ni . . . -āhāram . . . -dai-]
- 2, vatam Kātyāyani-gōtrēṇa 11 || Chitrā nakshatram ēka-tāram tilaka-samsthitam trimśa-muhūrta-yōgam mudga-[*bhōjanam . . -daivatam . . -*]
- 3, kī-gōtrēṇa 12 || Svātir=nakshatram ēka-tāram tilaka-samsthitam pañchadaśa-muhūrta-yōgam phal-āhāram [. . . -*daivatam . . -gō-*]
- 4, trēṇa 13 || Viśākhā nakshatram dvi-tāram vishāṇa-samsthitam pañcha-chatvārimśa-muhūrta-yōgam ti [. . . -*āhāram . . -daivatam*]
- 5, Satkrityāyani-gōtrēṇa 14 || It=imāni bhō Pushkarasārin=sapta nakshatrāṇi dakṣiṇa-dvārikāni || [*Anurādhā nakshatram . . -tā-*]
- 6, ram ratna-sphadika-samsthitam trimśa-muhūrta-yōgam māsha-sūp-ōdana-bhōjanam Mītra-daivatam Alamba[*nēyavi gōtrēṇa 15 ||*]
- 7, Jyēsthā nakshatram tri-tāram yuva-maddhya-samsthitam pañchadaśa-muhūrta-yōgam śāli-yav-āhāram Indra-dēvatam Dīya . . . -gōtrēṇa 16 || [*Mūlō nakshatram cha-*]
- 8, tus-tāram guja-vikkrama-samsthitam trimśa-muhūrta-yōgam nyagrōdha-kashāy-āhāram Āpa-daivatam Darpa-katyāyani-[*gotrēṇa 17 || Pūrvaśhādhā na-*]
- 9, kshatram tri-tāram pula . . . -samsthitam trimśa-muhūrta-yō[*gam*] mūla-phal-āhāra[ni] Nṛiti-daivatam [. . . -*gōtrēṇa 18 || Uttarāśhādhā na-*]

It will be observed that the spelling and grammar is occasionally irregular. Thus we have a wrong quantity on fl. 13b⁷ *trimśa* for *trimśa* and *ibid.* and fl. 15a⁸ *muhūrta* for *muhūrta*, fl. 14b⁶ *mītra* for *mitra*, fl. 15b⁴ *chatvārimśa* and *vimsatīnām*, fl. 15a⁶ (see plate) *dvārikāni* for *dvārikāni*; *ri* for *ri* in fl. 14b⁶ *trimśa* for *trimśa*, fl. 14b⁷ *tritāram* for *tritāram*;

ir for ri on fl. 155⁷ in *kīrtikā* for *kṛitikā*; ḍ for ṭ on fl. 141⁶ in *sphaḍika*. Want of sandhi: fl. 136⁷ *dadhi-dhāram* for *dadhyādhāram*. Blunder: fl. 15a⁷ *uttamra* for *uttara*; fl. 15a³ *vikshnu* for *vishnu*; fl. 13b⁴ *asākhā* for *viśākhā*, though these two forms may be synonyms; in the Abridged Petersburg Dictionary both forms are given as synonyms of a certain plant. Similarly fl. 14a⁶ *sarpi* 'serpent' for *sarpa*, fl. 15b¹ *Bhārgavān* for *Bhārgavō*. Omission of final consonant in fl. 14a⁶ *yakri* for *yakrit*, fl. 15a³ (see plate) and fl. 15b⁶ *abhiji* for *abhijit*. Anomalous construction in fl. 15b⁶ *ekā abhiji ashṭau muhūrtas*. I am not quite satisfied that I have read correctly the words *kraksha* fl. 15a³, *Brahmāvarṇi* fl. 15a³. In fl. 15a³ (see plate) there is a curious symbol above *sapta*; and since on fl. 15b⁶ it is stated that *Abhijit* has eight (*ashṭa*) *muhūrtas*, I believe that the symbol is the numeral figure 8, intended as a correction. The *s* of *sapta* has not quite its proper shape; I believe the writer or revisor meant to alter *sapta* into *ashṭa*, but seeing his failure in altering the shape of *sa*, he abandoned his intention and over-wrote the figure 8. There are numerous traces to be met with of a revisor's work; thus in fl. 15a³ *krakshādhāram* the *ra* was originally omitted and has been supplied interlinearly; similarly the syllable *nī* of *katyāyuni* in fl. 15a³. (See the Plate.)

The portion extracted by me, may be translated thus, observing the proper sequence of the leaves:—

(Leaf 13.) Who are they? They are the Vātsas, Brahmachārins and Chhandôgas. How many are the divisions of the Chhandôgas? Six. Which are they? They are as follows:—Those whose food consists in (1) wheat, (2), (3), (4), (5), (6) francolino partridge.⁵ To which gôtra does their mother belong? To Parāśara's. Has your honour any (particular) reading of the list of Nakshatras? Tell me! They are as follows:—1, Kṛitikā, 2, Rôhinî, 3, Mrigashîra, 4, Ârdrâ, 5, Punarvasu, 6, Pushya, 7, Âślêshâ, 8, Maghâ, 9, Pûrva-phalgunî, 10, Uttara-phalgunî, 11, Hasta, 12, Chitrâ, 13, Svâtî, 14, Aśākhâ (Viśākhâ), 15 Anurâdhâ, 16, Jyêsthâ, 17, Mûla, 18, Pûrvâshâdhâ, 19 Uttarâshâdhâ, 20 Abhiji, 21, Sravana, 22 Dhanishṭha, 23, Satabhishâ, 24, Pûrvâ Bhadrpadâ, 25, Uttarâ Bhadrpadâ, 26, Rêvatî, 27, Aśvinî, 28, Bharanî. These twenty nakshatras—what are the numbers of their stars, what are their configurations, what are the numbers of their muhūrtas, what are their gôtras, what kinds of food may be taken under them, what are their daivatas?

The following part of the translation, I give in tabular form, for the sake of convenient reference.

⁵ *Atyāsanam* I take to be a mis-reading for *ity-āsanam* (=aśunam).

No.	Name.	Stars.	Configura- tion.	Muhūrta.	Food.	Daivata.	Gōtra.
1	Kṛitika	6	razor	30	curds	Agni	Agnivēśya.
2	Rōhiṇī	5	seat of a cart	45	beef and fish	Prajāpati	?
3	Mṛigāsira	3	deer's head	30	venison and fish	Sōma	?
4	Ārdṛā	1	mole	15	butter	Rudra	Hārītāyana.
5	Punarvasu	2	flag	45	froth of boiling butter	Āditya	Vaśishṭha.
6	Pushya	3	vardhamāna	30	honey	Vrihaspati	Alabanēyavī.
7	Āślēshā	5	flag in the air	15	fish and liver.	Sarpa	?

These, oh Pushkarasāri, are the seven nakshatras that are situated in the East.

8	Maghā	5	river-arbour	30	?	Pitri	Pīṅgāyanī.
9	Pūrva-phal- gunī	2	flag	30	?	Bhaga	Gōtama.
10	Uttara-phal- gunī	2	flag	45	?	Ārya	Kauśiki.
11	Husta	5	hand	30	?	?	Kātyāyanī.
12	Chitrā	1	mole	30	mudga-bean	?	?
13	Svātī	1	mole	15	fruit	?	?
14	Viśākhā	2	horn	45	?	?	Satkrityāyanī.

These, oh Pushkarasārin, are the seven naksharas that are situated in the South.

15	Anurūdhā	?	crystal	30	meat of māsha- beans	Mitra	Alambanēyavī.
16	Jyēsthā	3	waist of a youth	15	rice and wheat	Indra	Dīya —.
17	Māla	4	elephant's foot	30	infusion of Ficus Indica	Āpa	Darpa-katyā- yanī.
18	Pūrvāshādhā	3	?	30	roots and fruit	Nariti	?
19	Uttarāshā- dhā	4	elephant's foot	45	honey and parched grain	Vaiśya	Maudgalāyanī.
20	Abhijit	3	cow's head	(8) 7	vāyu-kraksha (?)	deest	Brahmāyanī.
21	Sravana	3	waist of a youth	30	bird's flesh	Vishṇu	Brahmāvarṇī.

These, oh Pushkarasāri, are the seven nakshatras that are situated in the West.

22	Dhanishthā	4	bird (kito)	30	?	Vāsava	Katyāyanī.
23	Satabhishā	1	mole	15	?	Varuṇa	Tāṇḍāyanī.
24	Pūrvā Bha- drapadā	2	flag	30	?	Ābhivṛiddhi	Jātukarṇī.
25	Uttarā Bha- drapadā	2	flag	45	beef	Āryamākalpa	Hiraṇyāyanī.
26	Rēvatī	1	?	30	consistent molas- ses	Pushya	Bhārgavan.
27	Āśvinī	3	?	30	liver and flesh	Gandharva	Āśvāyanī.
28	Bharanī	3	pudendum muliebre	30	rice	Yama	Bhārgavī.

These, oh Pushkarasāri, are the seven nakshatras that are situated in the North.

Of these twenty-eight nakshatras, oh Pushkarasārin, how many nakshatras occupy a period of 45 muhūrtas? Six; they are these:—Rohiṇī, Punarvasu, Uttarā Phalgunī, Viśākhā, Uttarāshāḍhā, Uttarā Bhādrapadā. Five nakshatras take up 15 muhūrtas, namely Ārdrā, Aślēshā, Svāti, Jyēsthā, Satabhishā. One, Abhijit, occupies eight muhūrtas. The remainder are nakshatras occupying 30 muhūrtas. Of the nakshatras, situated in the East, Kṛitikā is the first and Aślēshā, the last (counting from East to West). Of the nakshatras, situated in the South, Maghā is the first, and Viśākhā, the last. Of the nakshatras, situated in the West, Anurādhā is the first, and Śravaṇa, the last. Of the nakshatras, situated in the North, Dhanishṭhā is the first, and Bharanī, the last.

This work is clearly an astronomical treatise of a very ancient type. The most ancient astronomy of the Hindūs was based on the lunar zodiac, comprising 27 (or afterwards 28) asterisms, the so-called nakshatras, the series of which commenced with Kṛitikā or the Pleiades, and ended with Aśvini and Bharanī. This system obtained among them till the introduction of Greek astronomy into India, about the middle of the 2nd century A. D. (the time of Ptolemy). About that time the order of the nakshatra series, which was now no more in accordance with reality, was rectified, and the two last nakshatras were placed first, so that the series now commenced with Aśvini (*i. e.*, β and γ in Arics). This new order is that found in all Indian astronomical works, subsequent to the Vedic period.

Further: the older series, beginning with Kṛitikā, consisted originally only of 27 nakshatras. It was, apparently, only in the later stage of the Vedic period of the Brāhmaṇas and Sūtras, that a 28th nakshatra was added; this was Abhijit, which was inserted as No. 20 in the original list. The first mention of Abhijit occurs in the Taittirīya Brāhmaṇa, and it formed already a part of the nakshatra series in the time of the grammarian Pāṇini.⁶ The latter's date is probably at the end of the 3rd century B. C. The earliest mention of the 28 nakshatras in China (introduced by the Buddhists) is in the middle of 3rd century B. C.⁷

Accordingly we have roughly, as the termini *a quo* and *ad quem* for the composition of our treatise, the third century B. C. and the second century A. D. This is about the period of the last stage of the Vedic literature, *viz.*, that of the Sūtras. To this period, belong the two small astronomical treatises, the Nakshatra-kalpa and the Śānti-kalpa,

⁶ See Weber, *Die Vedischen Nachrichten von den Nasatra*, part II, pp. 279, 287, 325.

⁷ See *ibidem*, part I, pp. 298, 300.

which are attached to the Kausika Sûtra of the Atharva Veda.⁸ I have not been able to examine any copies of them, but a brief account of them has been given by Professor Weber in his *Vedische Nachrichten von den Nazatra* (pp. 390–393). From this account it appears that the statements, especially, in the Nakshatra-kalpa, show a curious resemblance to those in our manuscript. Thus the Nakshatra-kalpa, too, gives lists not only of the shape, the divinity, the number of stars, and the duration of muhûrtas of every one of the 28 nakshatras, but also of their four-fold distribution into Eastern, Southern, Western and Northern, of their gôtra (or race of Rishi), and of the kind of food that may be taken under them. The Nakshatra-kalpa adds some further particulars, corresponding statements to which may have been in the lost portion of the manuscript, or may possibly be found in that portion which I have not yet been able to examine.

A confirmation of the age of the work may be found in the circumstance, that the information given in it is ascribed to Pushkarasarin. This renowned teacher is said to have been a contemporary of Buddha. He is mentioned as a teacher in the Prâtisâkhya Sûtra; and is also cited in the Vârttikas to Pânini by Katyâyana, their author.⁹

On the whole, therefore, and subject to the result of an examination of the whole manuscript, for which I have not yet been able to find time, I have come to the conclusion that this part of the Weber Manuscripts contains a hitherto unknown work belonging to the last stage of the Vedic period of Sanscrit literature.

I will, however, here add a few curious particulars that I have noticed in my cursory comparison of the manuscript with Prof. Weber's account of the Nakshatra-kalpa and similar works. The list of gôtras differs entirely; the only coincidence is in the gôtra of Krittikâ. Most of the daivatas agree; the most striking difference is in the case of the 27th nakshatra (Aśvinî), for whom our manuscript gives Gandharva as the daivata, while the Nakshatra-kalpa, in common with all other known works, gives the two Aśvins. Other differences may be mere blunders, thus Vaishya in No. 11 and Pushya in No. 26, for Viśvê and Pûshan respectively. Nariti in No. 18 may be a local variety of Nirriti. Curious are also, in our manuscript, Âbhividdhi and Âryamâkalpa in Nos. 24 and 25, for Ahirbudhnya and Aja-êkapâd respectively. The transposition of Âpa in No. 17, and of Nariti in No. 18, may be an accidental mistake for Nariti in No. 17 and Âpa in No. 18. In the case of No. 20 (Abhijit) our manuscript gives no daivata at all, the usually given daivata being Brahman; but this, too, may be an accidental omission.

⁸ See Weber's *History of Indian Literature*, p. 153.

⁹ See Weber's *History of Indian Literature*, pp. 102, 285

As to the number of stars, composing the several nakshatras, our manuscript differs in nine cases from the Nakshatra-kalpa: viz. in Nos. 2, 7, 8, 16, 17, 18, 20, 22, 27. Curiously enough in five out of these nine cases (viz., Nos. 2, 7, 8, 16, 20) our manuscript agrees with Brahmagupta's statements.

With regard to the duration of the muhūrtas, our manuscript has two curious differences. Firstly, it enumerates only five nakshatras of a duration of 15 muhūrtas, while the usual number in the Nakshatra-kalpa and other works is six. These works add Bharanī (No. 28), to which in our manuscript a duration of 30 muhūrtas is given. Secondly, our manuscript gives to No 20° (Abhūt) a duration of 8 muhūrtas, against the usual one of one muhūrta. The whole list of durations stands thus:

Weber MS.				Nakshatra-Kalpa, etc.			
6 nakshatras of 45 muhūrtas.				6 naksh. of 45 muh.			
16	„	of 30	„	15	„	„	30 „
5	„	of 15	„	6	„	„	15 „
1	„	of 8	„	1	„	„	1 „

I now proceed to Part II of the Weber Manuscripts. See Plate I, fig 2. It consists of seven leaves, unfortunately mutilated on the left-hand side, which would have shown the numbers of the leaves. Their size is $6 \times 2\frac{3}{8}$ inches. Four leaves have 9 lines each to the page, the three others, only 6 lines. This may possibly show, that the two sets belong to two different manuscripts, but I have not yet been able to examine them more closely. The characters are again a variety of the North Western Gupta.

The page (obverse of the leaf), figured on Plate I, reads as follows. The paper is very soft, and some portions being rather fretted, are very difficult to read.

- 1, ता ह्यहम् तस्य तद्वचनं गुणा रश्मि वचनसम्वीत् ॐ ह्यहं शिवो
विशालाक्षि त्वं शिवा नामनामसः
- 2, विनाशाय ह्यनाशाय तिष्ठतु • ॐ ये च त्वां पूजयिष्यन्ति कौर्तयिष्यन्ति
ये नराः प्रदास्यसि वरं तेभ्यो य
- 3, वक्ष्या • ॐ वक्षिषुपप्रदानेन पुष्यदीपानुसोपनैः भक्त्या च प्रयता मर्त्यो
तेषां त्वं भवकासदा • ॐ ह्रीं
- 4, प्रवक्ष्यामि यानि गुह्यानि ते शिवे • आहूता येस्त्वनामस्य भविष्यति
वरप्रदा • ॐ ह्रीं योजनानां
- 5 ये पि क्षिता गुणा मन्त्रिष्यसि • श्रीम् जया जयन्ती विजया चमोधा
अपराजिता • जया जायू

- 6, जंभनी रिपुनाशनी • ॐ सचचक्रिखा भद्रा पुंगवा ब्रह्मचारिणी माया
मायाविनी सदा कंबुपी
- 7, . . . नना • ॐ शुक्तिकर्षी महानागा अजेया अपराजिता • शक्तिर्वाग्निर्दंष्ट्रा
वेताही वेदनिर्मिता •
- 8, . . . दीर्घलांगुला ऊडका जातचारिणी • विदिका विजया धन्या असिनीना
द्वकोदरी • ॐ वल्लभला सर्पना
- 9, . . . जिह्वा महागुहा • तुरुकी च तरुकी च बलुकी च शिवा तथा • ॐ चारणी
च द्वाली च धैरवा भीमदर्शना •

It may be noticed (see the Plate) that the interpunctuation is indicated by a dot, or occasionally two dots. The numerals are, again, of the ancient style. In the following Roman transliteration I have supplied, in brackets and italic type, the missing portions. Here the metre and context has been a guide, though to some extent, of course, the restorations are conjectural. It will be seen from these that, as a rule, the space of four aksharas or $\frac{3}{4}$ of an inch is lost, *i. e.*, that the original length of the leaf must have been $6\frac{3}{4}$ inches. The work is written in the ślōka metre.

- 1, tā hy=aham [1]
tasya tad=bachanam śrutvā Rudrō vachanam=abavit || 10
Aham Sivo Viśāl-ākshi tvam Siva nāma nāmataḥ [1]
- 2, [Kāma-dēva-]vināśāya Dakṣha-nāśāya tiṣṭha tu || 11
Yē cha tām pūjayishanti kīrtayishyanti yō narāḥ [1]
pradāsyasi varam tēbhya yā
- 3, vas=tathā || 12
Bali-dhūpa-pradānēna pushpa-dīp-ānulēpanaiḥ [1]
bhaktyā cha prayatā martyā tēbhām tvam bhava-kāma-dā || 13
- 4, pravakṣyāmi yāni guhyāni tē Sive |
āhritā yais=tvam=āgamya bhaviṣyasi vara-pradā || 14
Yōjanānām
- 5, [saha]srē 'pi sthitā śrutvā gamishyasi | om [1]
jayā jayanti vijayā amōghā aparājitā |
jayā jāmbū-
- 6, [nada-prabhā] jambhant ripu-nāśanī || 15
Sahasra-kiraṇā bhadra pumgavā brahma-chārīṇi |
māyā māyāvinī sadyā kambu-grī
- 7, [vā rakt]-ānanā || 16
Sukti-karṇī mahā-nāgā ajēyā aparājitā |

- śakti-karṇ=āgni-damśhṛālā¹⁰ vētāḍi vēda-nirmitā || 17
 8, . . . A dīrgha-lāṅgulā huhukkā jāta-hāriṇī !
 viddhikā vijayā dhanyā asi-lōmā vṛik-ōdarī || 18
 Dhalanḍhalā sarpa-nā
 9, [thā dīrgha]-jihvā mahā-galā !
 turūki cha tarūḍi cha balūki cha śivā tathā || 19
 Āraṇyī cha sṛigālī cha bhairavā bhīma-darsanā || 11

This may be translated thus:—

(10) Hearing his (her) words, Rudra spoke as follows: (11) I am Śiva, oh large-eyed-one! Thou shalt be called Śivā after my name; and thou shalt be the cause of Kāmadēva's destruction and Dakṣha's death. (12) Those men that shall worship and extol thee, to them thou shalt grant gifts, as well as to them that . . . (13) Those mortals that show their faith and devotion to thee by offering of sacrifices and incense, by flowers, lights and anointings, to them thou shalt be the bestower of their worldly desires. (14) I will announce to thee, oh Śivā, all the secret things concerning thee! By whomsoever thou art called upon, to him thou shalt come and bestow on him gifts. (15) Even if thou art at a distance of a thousand yōjanas, yet thou shalt hear and go to him. Om! Thou art victorious, conquering, triumphant, unerring, unsurpassable, swift, brilliant as gold, crushing, destroying (thy) enemies, (16) thousand-rayed (like the sun), good, spouse of the Puṅgava (bull-like man), holy, illusory, creating illusions, ever-new, shell-necked, red-mouthed, (17) oyster-shell-eared, a great Nāga, invincible, unsurpassable, strong-eared, fiery-toothed, a Vētāḍi (goblin), set up by the Vēdas, (18) spouse of him with the long liṅga, a roarer, ravisher of new-born babes, transfixer, conqueror, enricher, with sword-like hair and wolf-like belly, (19) *Dhalanḍhalā* (?), mistress of serpents, long-tongued, large-throated, *turūki* (swift?), *tarūḍi* (young?), *balūki* (strong?) as well as lucky, wild, jackal-like, awe-inspiring, of fearful aspect.

I add the Roman transliteration of the reverse page. It is still more worn, and still more difficult to read:—

- 1, bandha-môchanī || 20
 Bhagavatyai namas=tubhyam êhy=âraṇyê śivê śubhê !
 adushtë bhaṭṭini bhaṭṭê guhî

¹⁰ The text actually reads śakti-damśhṛ=āgni-karṇ=āgni-damśhṛālā, with a stroke of cancellation drawn through the first damśhṛ=āgni. For śakti probably śukti should be read, though the epithet śukti-karṇ is already mentioned in the preceding hemistich.

¹¹ The interpunctuation is here indicated by two dots placed one above the other, like the visarga (:), instead of the single dot used everywhere else.

- 2, sint || 21
 Ek-ākshara-ravē dhātṛē tṛi-lōka-guru-vatsalē !
 satya-vāḍiny=umē chaṇḍē viśalyē śatru-nāśani || 22
 Bhaya-dē dhana-dē
- 3, katu-vināśani !
 daityānām bala-hartāri māmśa-sōṇita-bhōjani || 23
 Vapā-dhūpa-priyē rōdrī kāla-rātri mahā-ravē !
 asi-
- 4, [lōmē] . . danti śūlalō (?) śūla-bhīṣhaṇi || 24
 Pañch-āyushyē śhaḍ-ādhiikyē na¹² ch=āśhṭadaśa-bhīṣhaṇi !
 kṛishṇē gauri pradīptī
- 5, [cha] . . . lamba-chūchukā || 25
 Mēgha-dundubhi nirghōshē sarva-vyādhi-pramōchani !
 sarva-vyasana-mōktāni kali du-svapna-
- 6, || 26||
 . . dūti śivē gauri karādē lōhit-ānanē !
 prachaṇḍē amṛit-ōḍgāi¹³ abhra-yāuṇ manō-javē || 27
- 7, ye vṛiddhē mātṛi-varga-prachāriṇi !
 śrī-lakṣmīr=vapuḥ-puṣṭis=tvam siddhiḥ kīrtir=ēva cha || 28
 Hrī śāntiḥ kānti-rosa
- 8, tu sādhani !
 yadi pāśa-balaṁ satyaṁ viśvē dēva-balaṁ yadi¹⁴
 nāśayishyasi śatrūṇām=āyur=vīryaṁ dhanam .
- 9,
 [dēva-rājasya satyēna pūrva-līṣi] yadi sthitā || 30
 Dharmā-rājasya satyēna dakṣiṇasyām yadi sthitā¹⁵
 Varuṇasya

This work appears to be a *stōtra*, or hymn, in honour of Śiva's spouse, Pārvatī, after the manner of the Purāṇas. Perhaps it may be possible, hereafter, to identify it with some work already known. I may mention that, in glancing over another page, I have noticed directions given as to the particular kinds of sacrifice which are to be offered (to Pārvatī ?) in the case of each of the four castes. The passage runs as follows:—

Anātyē ghṛita-hōmaḥ kartavyaḥ || Brāhmaṇō dadhi-ghṛita-hōmaḥ
 nāma-gōtraṁ sarvēśhām grāhyam || [*Kshatriyē*] ghṛita-madhu-hōmaḥ ||
 Vaiśyē dhānya hōmaḥ || Sūdrō matsya-hōmaḥ || Sarva-vaśīkaraṇē vachā-
 hōmaḥ.

¹² Or *navā* for *nachā*.

¹³ Or perhaps *ōḍbhōrē*. The letters are indistinct.

¹⁴ Here the number 29 is omitted in the text.

¹⁵ See note ¹¹ on page 51.

That is: In the case of a minister an oblation of clarified butter should be made; in the case of a Brâhman, an oblation of curds and clarified butter, (and) the name and gôtra should be mentioned in every case; in the case of a Kshatriya, an oblation of clarified butter and honey (should be made); in the case of a Vaiśya, an oblation of rice (or grain); in the case of a Sûdra, an oblation of fish; (and) generally for the purpose of subjecting any one to one's power, an oblation of Vachâ (or the root of *Acorus calamus*).

Part III. See Plate I, fig. 3. There are six leaves; four of them are mere fragments, but two are fairly complete; one of the latter has been figured. These two measure $6\frac{1}{4}$ by $2\frac{1}{2}$ inches, with 6 lines to the page. The characters are a North Western Gupta variety. The figured page reads as follows:—

- 1, मेन धोवितव्या—स्वस्थो भवति ॥ नमो विद्युजिह्व
- 2, युजु युजु—युजि युजि—मालिनि—विमाननि—अमुकं च
- 3, . . . मयी प्रतिमा कर्तव्या—सा प्रतिमा सर्ववन्तैस्तेन मक्षयितव्या
- 4, . . . ॐ० यि जुह्य ॥ असुको ज्वरितो भवति— ॥ मोक्षितुकामेन तद्यथा
- 5, . . इट्टि इट्टि—इट्टि इट्टि इट्टि—कषमसि—माक्षसि—कटकपलि¹⁶—
- 6, . डकं प्रेषामि—इमं पर्वतराजानं रवत—कुष्ठचिंघु परिजप्य—

Roman Transliteration.

- 1, mēna dhôvitavyâ | svasthō bhavati || namô Vidyu-jihva-
- 2, [mâtamga-râjasya] yuju yuju | yuji yuji | mâlini | vimânani | amu-
kam nri-
- 3, [pa-sulva] mayi pratimâ karttavayâ | sâ pratimâ saishava-tailēna
makshayitavyâ
- 4, . . . agni juhya || asukô jvaritô bhavati || môchitu-kâmēna | tad=
yathâ
- 5, . . itti itti | itti itti itti | kshamasi | mâkshasi | kaṭaka-pali¹⁶ |
- 6, [ka]ṭakam prêshâmi | imam parvata-râjânâṁ ravatu kushṭha-
himgu parijapya |

The reverse page runs as follows:—

- 1, . . m=pitavyô môkshô bhavati || namô Vidyu-jihva-mâtamga-
râjasya | tad=yathâ | kulimâ-
- 2, [li kulimâ] li | kulimâli | svâhâ || sūlbasya pratimâ kar-
tavayâ | taila-ghṛitâ-

¹⁶ Or, perhaps, only kaṭa-pali. The second ka is half deleted.

- 3, [*n = āmuka-nri*] *pasya nāmēna sô dahyati — || mōchitu-kāmēna |
gandh-ôdakam=parijapya | i-*
4, *mōcha | satasati | dhana-dhana svâhâ || sâ pratimâ
snâpayita-*
5, [*vyâ*] *maḥ Śabarânām | prakhalê prakhalê | prakhalê pra-
khalê | viddhâ*
6, *grihya nisêhitavyaḥ ||*

This appears to belong to some work on sorcery; and from the fact that on the second leaf occurs the phrase *sarva-siddhānām pañch-ābhijñānām namaḥ* it would seem to be a Buddhistic work. For the "five knowledges" are a well-known Buddhist term. The diction is a barbarous mixture of Sanskrit and Pāli. The following is a tentative translation:—

"(The image) should be washed with He will be well. Salutation to the elephant king with the lightning-like tongue! Yuju! Yuju! yuji! yuji! Oh Mālini, oh Vimānani! Of such and such a king let an image of copper be made! That image should be rubbed with mustard oil, (and) having burned (it in) fire , such a one will be attacked with fever. If it is wished to deliver him (*from fever*), the following (*charm should be used*): "Itṭi, itṭi, mayest thou forgive, mayest thou wipe off; Oh Kaṭakapali; I send an army; let him praise this mountain-king!" Having uttered a spell over kushṭha and asafoetida, (this remedy) should be drunk; (*then*) there will be deliverance. Salutation to the elephant-king with the lightning-like tongue! (*Then to be said*) as follows: "Hail to her who bears a chaplet of kuli (*Solanum Jacquinii*)"! An image of copper should be made; (this should be rubbed) with oil and clarified butter (*and heated*) in such a king's name; (*then*) he will burn (*with fever*). If it is wished to deliver (*him*), a spell should be said over fragrant water: "itṭi, itṭi deliver him, oh Satasati, Dhana-dhana, hail!" That image should be bathed (*with the fragrant water*) (worst) of the Śabarās! oh wicked one! oh pierced one! Having taken (*him*), he should be warded off.

Part IV. See Plate III, fig. 1. No more than the fragment which has been figured exists of this manuscript. It is, however, of very considerable interest, as it presents a species of the North-Western Gupta character, which forms the link between that and the Central Asian type of Nāgarī characters. For comparison the forms of the super-scribed vowel *e* and of the consonants *j*, *t*, *n* may be especially noticed.

The figured page reads as follows:—

1, मय विचययः अहाहंमपूर्वम् अर

- 2, भवति अभिरूपः सुस्थितः जातिशरो धर्मवान् . . .
 3, यताम् ८ द्वाविंशत्यक्षराभ्यामेवमस्तीतिव्यञ्जनानि च
 4, भवत्यङ्गीरसः कथम् १ लक्षणैः सर्वदेनेन
 5, यद्वाते समचित्तेन भवत्यङ्गीरसो मुनिः ०८ वे
 6, समागमो जिनैर्नित्यं

In the following transliteration, I have, as before, supplied missing portions, where it was possible, in brackets and italic type. The work is written in the ślōka metre, and it will be seen that about four or six aksharas are lost on each side, on the assumption that the extant piece formed the middle of the leaf. Accordingly the whole leaf, in its original state, probably measured 7 inches, allowing a little for the margins.

- 1, [ati]śāya-vichākṣhaṇaḥ [i]
 [7 ॥]
 2, k[ō] bhavati hy-abhirūpaḥ su-sa[m]sthitaḥ []
 jāti-smarō dharma-dān . . .
 3, yatām 8 [॥]
 Dvā-s-tri[m]śal-lakṣhaṇāny=ēvam=aśīti-vyaṁjanāni cha [i]

 4, bhavaty=Angīrasaḥ katham 9 [॥]
 Lakṣhaṇaiḥ sarvva-d[ī]nēna
 5, [i]
 śuddhyatē sama-chittēna bhavaty=Angīrasō munih 10 [॥]
 Hō
 6, ḥ [i]
 samāgamō jinair=nityam [11 ॥]

Reverse :

- 1, dānasya chōsthitaḥ [i]
 t[ī]n-āsi
 2, [12 ॥]
 [S]mrit[i]m[ām]=ś=cha katham vā syān=matimām=ś=cha vicha-
 kṣhaṇaḥ [i]

 3, [a]rhasi 13 [॥]
 Aśaṭaḥ smritimām hi syān=imām=ś=cha vicha[kṣhaṇaḥ i]

 4, ēp-āpi prajñāyā dharma-dhāraka 14 [॥]
 Akṣhaṇēbhyaḥ ka

- 5, . . . gachchhati [1]
kôna pramattô bhavati bravîhy=etan=mam=ânaghañ 1[5 #]

- 6, [mā]rga-śīlêna gachchhati [1]
śūnyatā-bhāvan-ābhyāsa-tapa [16 #]

This may be translated thus :—

(Angirasa is) pre-eminently clever, thoroughly full of the eight-fold (qualities) (7) He is handsome, well-put-together, a rememberer of his former existences, an imparter of the Law (to others) (8) The 32 attributes as well as the 80 marks, how does Angirasa possess them? (9) By his attributes, his imparting of all things,, his equanimity he is purified,—is the Muni Angirasa. (10) his intercourse is constant with the Jinās (11) his function is the imparting (of the Law) (12) How is he thoughtfull and intelligent and clever art thou able (to tell me?) (13) He is guileless, thoughtful, intelligent and clever, (full of) wisdom, versed in the Law. (14) From inopportune things he goes (away); with reference to what he is indifferent and (yet remains) sinless,—that do thou tell me! (15) he walks in the moral 'precepts of the path (of holiness), . . . asceticism (and) the practice of meditation on Sūnyatā (or Nirvāṇa).

It is difficult to judge from such a small fragment, what the subject of the whole work may have been. That of the fragment itself is an eulogistic description of the Muni Angirasa. From the technical terms, occurring in the fragment, it seems clear that the work is Buddhistic.

Part V. See Plate II, fig. 1. There are eight leaves, measuring $8\frac{1}{2}$ by $2\frac{9}{16}$ inches. They are mutilated, however, on both sides. There are five lines to every page. The characters belong to the round variety of the Central Asian Nāgarī.

The figured page, being the reverse, reads as follows :—

- 1, ष . . इ शश्यत पूज
2, द्वाद्दशेन परिसुचिष्यति—याव एवमेव परिसुच . .
3, . . . शस्त्रं कर्मणि न विषा नाग्निं नाशौचिष न कश्चोर्द न वैताञ्ज न
4, . . . छं करो ति शत्यं पुरिमकर्मविषाकेव—एवमुक्तो भगवां न . .
5, . . . य . सेनापतिमिदमवोचत्—साधु साधु मादिभद्रं अनुजानामि मि

In Roman transliteration, as before :—

- 1, sha . . da śashyata pūja

- 2, ddhy-arha-dandēna parimuchchishyati | yāva evam=eva
parimuchch[ishyati]
3, [na] . . śāstra[n] kramati na viśhā n=āgni n=āśi-viśhā na kak-
khôrdā¹⁷ na vaitāla na
4, . . [ba]lam karōti atyattrā¹⁸ purima-karma-vipākōna | evam-uktō
Bhagatām ma[hārā-]
5, . [jam] ya[ksha]-sônāpatim=avôchat | sādhu sādhu Māpibhadra
anujānāmi mi

The obverse page has the following:—

- 1, manta varṇavanta yaśaśvina 6 [u]
 Mahā-bala-mahû-k[â]ya va [i]
 ..
 2 . na . manasâ Buddhâṃ vandanti Gautama 7 [u]
 Kumbhakarnô Nikumbhaś=cha Siddhanttham=aparâjitam [i]
 . ma .
 3, . . . dantô cha Sahasrâkshaś=cha Piṅgala [u]
 Kavilô Dharmadiraś=cha Ugratêjô . .
 4, . . [i]
 . . tvaṃ śaranam yānti su-p-prasaunēna chêtasâ 9 [u]
 tad=yathâ kadyê-kôdyê¹⁹

17 This is the passage referred to in my paper "The Third Instalment of the Bower MSS." in the *Indian Antiquary*, Vol. XXI, p. 369. On another leaf of the same MS., the word occurs once more, but spelled *kākhōrda* with a long ā. I wish to take this opportunity to correct my reading of the word in the Bower MS. It is there spelt *kākhōrda*, with the *jihvāmūliya* before *kh*, not *karkhōrda*, as I first read it. I owe this correction to a suggestion of Dr. A. Stein, who informs me that in modern Śāradā writing the difference between a superscribed *r* and the *jihvāmūliya* is very small. He suggests that there may be a clerical error in the Bower MS. This, however, is not probable. The forms of the superscribed *r* and the *jihvāmūliya* are widely different in the Bower MS, but on the other hand (as, for that matter, in Śāradā also) there is a resemblance between the super-compounded *v* and the *jihvāmūliya*. Hence I took the symbol to be that for *v*, while I should have recognized it as the symbol of the *jihvāmūliya*. Dr. Stein, further, informs me that the word *kākhōrda* occurs also in VII, 298 of the *Rājataranginī*, in the form *khurkhūṣa*, and that it is still used in modern Kashmiri in the form *khurkhākhūs*. He suggests that it is rather these more modern forms that represent the proper spelling of the word, with reference to the correct placement of *r* (i. e., *karkhōrda*, not *kākhōrda*). I do not agree with this; we have, in the Bower MSS. and the Weber MSS, the earliest (known) spellings of the word, compared with which the more modern spellings in the *Rājataranginī* and in Kashmiri are more likely to be corruptions.

¹⁸ Perhaps *atyattrā* is an error for *anyattrā*, and *vipākē na* may have to be separated.

¹⁹ The letter which I have read *dy* is doubtful. For a facsimile of it, see Plate IV of the alphabet.

5, i . i . i . i . âha — yattra (śibha-dattâ) bha-
gava

This may be translated as follows :—

"He will be delivered from condign punishment; and so forth (*as before down to*) even so he will be delivered , no weapon can hurt him, nor poison, nor fire, nor poisonous snake, nor Kakkhôrdda, nor Vaitâla, nor can have power over him here (in this world) through the natural consequence of his deeds (done) in former existences." Having thus spoken, the Blessed one spoke to the Mahârāja, the General of the Yakshas (thus): "Verily, verily, oh Mânibhadra! I permit thee

The brilliant, the glorious (6), they of great strength, of great body intently praise Buddha. Gautama, (7) Kumbhakarna, and Nikumbha (praise) the Siddhârtha, the invincible, and . . . danta, Sahasrāksha and Pingala, Kapila, Dharmadîrṇa and Ugratêja . . . , they seek thy protection with a well-pleased mind, (9) (saying) as follows: "Kadyô, kôdyô."

I do not think that much can be lost at the two sides. Lines 4 and 5 of the reverse show this. On two other pages the *mahēyaksha sēnāpati Mânibhadra* and four *mahârāja yakshasēnāpati* are spoken of, which shows how the lacuna should probably be filled up. The original size can also be calculated from the ślōkas on the obverse page. This page seems to give an enumeration of Mahânāgas. Of the ślōkas, those numbered Nos. 6, 7, 8 and 9 are preserved. The rest is in prose. The whole reminds one somewhat of the snake-charm in the Bower MSS., which I have published in the *Indian Antiquary*, vol. XXI, p. 349 ff. The full size of the leaf, in its original state, may have been about 9½ inches, inclusive of margins. The figured leaf is the best preserved; some of the others are in a scarcely legible state. But it seems clear from what remains that the work contained a charm given by Buddha (Bhagavān) to the Mahāyaksha Mânibhadra.

Part VI. See Plate II, fig. 2. There are five leaves, measuring 7¾ by 2¾ inches, with 7 lines to the page. The leaves, though practically complete on the left side, are greatly mutilated on the right side, by nearly one-third. The characters are another specimen of the round variety of the Central Asian Nāgarī.

The figured page is the reverse and reads as follows :—

- 1, नव एत एत च सन्निरुक्तः . . .
- 2, . व . रक्ष संज्ञां काले कर्त्तव्यां कथो वीदुः ३
- 8, . . यु . इता उपच . चाव रामतामभिरिदिशेत् ६

- 4, अभिविषा मया ○ कनो राजपुत्रं कुलोद्गतः B८ व
 5, . : सप्त प्रकृतयो यस्मात् राट् व निरपन्नवद् B८ न
 6, नितः राजानः करदा यस्मात् विषय विजयीकृतः B८ इदिय . .
 7, अभित्यमानुषां लोकांस्तु संजते° B९ निषण्णमिममग्नी

In Roman transliteration I give the obverso page (not figured) first:—

- 1, . . 40 [1]
 Vyapêta-rôga-maraṇam vipram sa[m]pariki[r]tyatô |
 apritiś=ch=ābhishakta . . . [. 41 ||
]
 2, tatô 'yam kuṇḍāśi puṁśchali-patib [1] .
 vapâ-pushpa-nibham vastram mahârāja . . . [. 42 ||
]
 3, jâmbukaś=ch=êti tat-samam [1]
 lêhakô 'vyakta-vachanô dhûrtas=tu . rtiva . [. 43 ||
]
 4, vidhushikô mataḥ [1]
 chatur*bhāgas=turiyam syâ jaghanyam kaṭi [. . 44 ||
]
 5, vikramêṇa balêna cha |
 uttamô yaḥ samânêbbhyaḥ sa [. 45 ||
]
 6, . . . laukikânām tath=niva cha [1]
 parinishṭhâ-vidhi-jñô yaḥ sa [. 46 ||
]
 7, ni . kaḥ [1]
 shaḍ-vaṁśô rāja-yajñâ yas=tan-tu [. 47 ||
]

Reverse (figured).

- 1, [1]
 . ndhava vṛitta vṛitta cha sanniruktaḥ [. . . 48 ||
]
 2, . . va . [1]
 rahasa saṁgatām kâlô kartsnitām kavayô vîduḥ 4[9 ||
]
 3, . . m [1]
 [pra]dattâ puruṣa-jñân=cha rāmam tām=abhinirdisêt 50 [11
]
 4, ābhipekṣhām mahâtmanô rāja-putram kul-ôdgataḥ 51 [11
 Ya [.]

- 5, . h [1]
 sapta prakṛitayô yasya rāshṭram cha nirupadravam 52 [u]
 na [. prakṛi]
 6, rtitaḥ [1]
 rājānaḥ kara-dā yasya viśaś=ch=āvijayī-kṛitaḥ 53 [u]
 Isṭiya [.]
 7, anitya-mānushām lōkām=s=tu samjātê²⁰ 54 [u]
 Nighaṇḍa-nigama-prām [.]
]

The obverse of the next leaf continues as follows :—

- 1, . . -ch-chhatraṁ kshatriyair=Buddha-nirjitaiḥ 55 [u]
 Eka-ch-chhatraṁ mahīm vyamktê [.]
]
 2, vanād=upavanam smṛitam [56 u]
 Padminī rēju rājiva-chatra-paṭṭavatī smṛi[tā]

The remainder is almost illegible.

The leaf that immediately precedes the foregoing two leaves, reads as follows :—

Obverse.

- 1, shṭhaś=chaṇḍa-samjñitam 24 [u]
 Paramê-shṭhī mataḥ śrêshṭhaḥ prê . priya . da [. . .]
]
 2, [kī]rtitam 25 [u]
 Pada-kṛich=charmakara syāt=tapitas=tu vamô mataḥ [1]
 lāvanyam=āhur=madhu [. 26 u]
]
 3, . svasâ tu bhaginī matâ |
 vâta-pitta-kaph-âtmanô vyâdhayaḥ [parikīrtitâḥ 27 u]
]
 4, . . ttâ hy=upadravaḥ [1]
 ajñô vēsaḥ samākhyâtô nuttam prêritam=uch[yaṭê 28 u]
]
 5, . . hūtaḥ [1]
 talpaṁ tu śayanam jñēyam khaṭv=êti . . thâ vaku 2[9 u]
]
 6, kilâsam pâṇḍuram jñēyam dōlâ prêṇkh=êti samjñitaḥ 30 [u]
 Barhimsi cha [.]
]

²⁰ This verse is blundered ; four syllables are wanting. Perhaps read *samjayatê*.
 The final double dot is not a visarga, but the mark of interpunctuation.

- 7, . bhavanam=uchyatê | 31 [u]
 Pradhānam²¹ yu[dha]m=ity=āhur=āyôdhanam=iti [smṛitam |
 32 u]
- Reverse.*
- 1, . da . ô dāsa-vṛittayaḥ sarandhra iti saṁsmṛitaḥ [1]
 ada [. 33 u
]
- 2, . . . tam vinirdiśet [1]
 bṛindāraḥ=tu vijñēyô yaḥ simha-natavām taraḥ [34 u

 .]
- 3, . . . hanāḥ prēta-rāja syāch=chhushmī tu Maghavaṁ mataḥ 35 [u]
 . . [.
 kum]
- 4, . . . bh[ī]las=tu matô nakraḥ kurmo gūḍh-aṅga uchyatê | 36 [u]
 . . . ptsava [.
 . .]
- 5, . . . panāma syā kārakô bhṛitakô mataḥ 37 [u]
 . . . Utthyaṁ praśasta[m] vijñê [yam
]
- 6, . . . prôktô mallēraḥ kêkarô mataḥ 38 [u]
 Parô 'patānam martyam²²=abhidhyā[nē]na [. . .
]
- 7, . . . [saṁpracha]kshatê | 39 [u]
 Yôtraḥ sa khalu vijñēyô yaḥ sutasy=āsutô mataḥ [h |
]

This work is written in ślōkas, from which it is easy to calculate how many syllables are lost on the right hand side. The number varies from about 12 to 18. Those aksharas which are actually lost are indicated by dots enclosed within straight brackets; those, not thus enclosed, indicate illegible letters. On an average, one-half (or 16 aksharas in each line) is lost of each ślōka. The space required for these lost aksharas would be $3\frac{1}{2}$ inches, allowing for a small margin on the right-hand side. Accordingly the total length of the original leaf must have been $10\frac{1}{2}$ inches.

In the following I give the translation only of those passages which are complete, taking the proper sequence of the leaves:—

(Verse 25.) By *paramēśthin* (he who stands foremost) is meant the best. (26) A *pada-kṛit* (foot-maker, shoe-maker) should be (understood to be) a worker in leather. By *tapita* is meant vomiting. (27)

²¹ Read *pradhānam*. So in the Amara Kōsha.

²² This *pāda* is short by one syllable. Perhaps read '*patānakam*.'

By *svasā* is meant a sister. All diseases (are said to be) due to air, or bile, or phlegm. (28) A disguise is called *ajña* (incognito). Something dispatched is said to be *nutta*. (29) *Talpa* should be known to be a bed. (30) *Kildsa* should be known to be a kind of jaundice. A swing is termed *prēñkhā*. (32) A war they call *pradhana*; it is also known as *dyōdhana*. (34) That charm which contains the *sinha-nata* (? , *nata* is *Tabernaemontana coronaria*) should be known to be the *Vrindāraka* (i. e., best of its kind).²³ (35) [*Nṛi*]*hana* should be understood to be the king of the *Prētas*. By *sushmin* (i. e., powerful) is meant *Maghavān*. (36) By *kumbhila* is meant a crocodile. The tortoise is said to be *gūdhānga*, (i. e., having hidden limbs). (37) By *kāraka* is meant a paid servant. (38) *Uttlya* should be known to be that which is excellent. By *mallāra* is meant squinting. (39) Excessive spasmodic contraction is known by the name of *martya* (i. e., mortal). By *yōtra*, indeed, should be known that which is the means of distilling the Soma extract. (41) A death which is not preceded by any illness is praised as *vipra* (i. e., excellent). (42) A *kuṇḍāsin* is a keeper of harlots. A garment [fit to be worn by] a *Mahārāja* is one which resembles flowers and the omentum. (43) A *lchaka* (licker, lisper) is one who does not speak plainly. (44) *Turiya* should be (understood to be) a quarter. (49) A mystery (plot?) harmonizing in time is what the poets know as *kartsnitū* (*kṛtsnatā*, or completeness). (52) Whose state possesses its seven constituent elements, and whose country is free of disturbance. . . . (53) To whom kings pay tribute, and whose people are never conquered. . . . (56) An *upavana* (grove or small forest) takes its name from a forest (*vana*). (57) A lotus is known as *rēju* or *rājira* or *chatrapaṭṭarati* (cf. *Skr. śatapatra*).

This clearly shows that the work is some Sanskrit vocabulary or "kōsha." Perhaps it may be possible, hereafter, to identify it with some one of the existing and known kōshas; or it may turn out to be a new and hitherto unknown kōsha-work. It appears to contain a good number of new words.

On the left-hand margin of the reverse of the last-copied leaf, opposite to the 3rd and 4th lines, there are faint traces left of the number 6. This, therefore, is the sixth leaf of the manuscript. As there are, on the average, 8 ślokas on a page, or 16 on a leaf, there should be about 90 ślokas (allowing a blank page to commence with) on the six initial leaves of the work. As the 6th leaf, however, only brings us down to the middle of the 40th śloka, it may be concluded, that the work was divided in chapters (*adhyāyas*), and that the 40

²³ This is puzzling. Perhaps *taraṣ* is a clerical error for *naraṣ*, and the meaning may be "one who has subdued a lion is a *Vrindāraka*."

ślōkas, a portion of which has been preserved, belong to the second chapter, while the first chapter must have contained about 50 ślōkas. Perhaps when the remainder of the existing fragment has been read, this point may be more certainly known. I have at present only read and copied those leaves, on which I could discern any numbers. These show us the partial preservation of the following ślōkas: 24-40 and 41-57; and this, consequently, proves that the figured leaf is the seventh of the manuscript.

The manuscript is rather carelessly written; thus we have *vidhu-shikō* for *vidushikō* on line 4 of the obverse of the 7th leaf; and *kurmō gūḍhaṅga* for *kārmō gūḍhāṅga* on line 4 of the reverse of the 6th leaf, and other blunders.

Part VII. See Plate II, fig. 3. This manuscript consists of 7 leaves, measuring about 5 by 2½ inches, but they are mutilated on the left-hand side. There are mostly six lines to the page; a few leaves have 7 lines, but these may possibly turn out to belong to a different manuscript. The characters are again another specimen of the round variety of the Central Asian Nāgarī.

The figured page reads as follows:—

- 1, तंञ्ज पूजितम् तथागतं नमस्यामि संबुद्धिपदोत्तमम् भग
- 2, . . . म् ॥ उत्तिले—दले—दुत्तिले—सिद्धिरस्तु स्वाहा—यः क
- 3, वतः श्रवकः भिक्षुर्वा भिक्षुणी वा उपसकौ वा उपसिका वा—इ
- 4, . इमं च मे हृदि पूर्वरारत्रमपरारत्रं मनसि करिष्यति
- 5, . . . येन परिमुचिष्यति—दण्डार्हप्रहारेण परिमुचिष्य
- 6, ि . पेण—पि लोम

In Roman transliteration;—

- [.] . jña pūjitam [॥]
Tathāgatam namasyāmi sambuddha-dvipad-ōttaram [1]
Bhaga
- 2, [.] . . . m ॥
Uttilē, dalē, dutillē, siddhir=astu svāha; yaḥ ka [ś=chid=Bhaga-]
 - 3, vataḥ śr[ā]vakaḥ bhikṣhur=vā bhikṣuṇī vā upāsakō va upāsikā
vā, i-
 - 4, .. imam cha mē hṛida[ya]m pūrva-rātram=apara-rātram manasi
karishyati
 - 5, .. [da]ṇ[ḍ]ēna parimuchchishyati, daṇḍ-ārha-prahârēṇa pari-
muchchishya-
 - 6, [t] i . pēṇa; pa . i . ā . -ārḥō lōma-

The reverse reads as follows :—

- 1, [parimu]chchishyati, imé cha . bhadanté bhaga-
- 2, ham=anubhavéna sa sâgar-ânta-prithivim=anuvicha-
- 3, tpalô narô, kumbha-karṇô mahâ-kumbha-karṇô, ârî, kôri,
kâ-
- 4, lê, pêlôlê, âyê, tâyê, ikshôri, kunê kunikê, yaś=cha mê
- 5, .. śukla-pakshasya pratipadam=upâdâya kṛishṇa-pakshê vâ snâta-
śu-
- 6, [chi] . . . dharmê saṁghê sa-gauravêṇa, ayô-vihitam chittam
varjitêna âdi . ê .

The first passago (obverse, lines 1 and 2) is a ślôka, which affords the means of calculating the extent of the lost portion of the leaf. The dots, inclosed within brackets, indicate the number of lost aksharas. They are ten or eleven, and would occupy the space of about $2\frac{1}{4}$ inches. The full size of the original leaf, accordingly, must have been $7\frac{1}{4}$ by $2\frac{1}{2}$ inches. This would seem to show that the smaller of the two extant wooden boards belonged to this manuscript; and this conclusion is confirmed by the fact that the board is inscribed with a line of writing in Central Asian Nâgarî (see *ante* p. 37). The leaf must have been torn exactly in the place where the string-hole originally was situated.

The remainder of the text is in prose. It seems to be another work giving the story of a Buddhist charm. From a remark, which I have noticed on another leaf, it would appear that the charm was communicated by Buddha himself to the Mahâyaksha Sênâpati Mâṇibhadra, with reference to a son of the latter, called Pûrṇaka. The subject of the work, therefore, is similar to that in the Vth Part, and it may possibly turn out to be another copy of the same charm.

The text above quoted may be thus translated :—

I salute the Tathâgata, the best of enlightened men, the Blessed one Uttilê, dalê, dutilê! May it be effective! Svâhâ! If any disciple of the Blessed-one, any male or female mendicant, or any male or female lay-devotee, keeps in mind this my heart in the former part and in the latter part of the night, he will be delivered from punishment, he will be delivered from any stroke of punishment; etc.

On the reverse occur the names of some Nâgas, *e. g.*, Kumbhakarṇa and Mahâ-kumbhakarṇa.

Part VIII. See Plate III, fig. 2. Of this manuscript only 4 leaves are preserved, measuring $5 \times 2\frac{1}{2}$ inches, but mutilated on the right-hand side. They are inscribed with 7 lines to the page, of which the lowest (or the uppermost on the reverse) is almost wholly obliterated. The characters are again a specimen of the round variety of the Central Asian Nâgarî, approaching rather more to the Indian Gupta type.

The figured page reads as follows :

1. पूर्वैः प्रत्यागच्छन्ति ॥ कपिलार्जुनौ गृह्य
2. चित्वा हि पूरमिष्टतायाः देवप्रतिमाय धूपो दातव्यो ततो वा च
3. च कुंचति गुरुगुलूपेन प्रकृतिस्थो भवति ॥ उपर पुढालि चण्ड
4. स्वाहा ॥ उपचारः ○ कृष्ये चतुर्दश्यां द्वात्रिंशोपविनेन चेतप
5. भां दण्डसूत्रेण व ति कृत्यते चतस्रोत्तरेण दीपो ज्वालयित
6. यथा तं वा सर्व्वरात्रि विद्य परिजपतया ततः प्र . . .
7. . तथ ना

In Roman transliteration :

- 1, chûrñena pratyâgachchhamti ॥ kapilâ-jihvâm grihya
- 2, shitavyâ hi pûra-miṣṭâyâḥ dēva-pratimāya dhûpô dâtavyô tatô
sâ a
- 3, . sa munçhati gurgulu-dhûpēna prakṛiti-sthō bhavati ॥ uparu pu-
ṭali chaṇḍa
- 4, svâha ॥ upachâraḥ kṛiṣṇe chaturddasyâm tṛi-râtrî-ôpôshitēna
svêtu-pa
- 5, bhâm dandala-sûtrēna varti kṛiyatô atasî-tailēna dipô jvâlayita
- 6, . jra stham . . tam cha sarvva-râtri vidy[â] parijap[i] tavyâ
tataḥ pra
- 7, . . tathâ . nâ

Reverse.

- 1, . . savi . paśyamti ya ya pañ ॥
- 2, kili[k]ilikasya jatu-kârēna śira-gôlakam kârnyēt tatra tōlakēna
- 3, . . . rmadēna limpitvâ tēna gôlakēna śasy-ôttarē ch=chluhliitavyē
dhâka
- 4, . dvitīyaḥ ēva bhârô bhavati sarvam vashyati tataḥ prikrich²⁴=
chhuddhê
- 5, dam cha bhavati ॥ tuṇḍa-kilikilikasy=âkshini grihya pishayē
srôñchatô
- 6, push[p]a-yôgēn=ânjitēna gavâchyû-pisâcham paśyamti tēna cha
purusha-vîrya
- 7, . . trayam pisâcham hanati tapyasya kachchhât=prasêvaka grihya
gam [.]

The text is too mutilated to admit of a satisfactory translation.
What there is may be thus rendered :—

He approaches with the powder ॥ Taking the tongue of a
brown cow the image of the dēva is to be fumigated with incense

²⁴ The reading is uncertain; it may be *prikrich* or *prîtrich* or *prinrich*.

mixed with *pūra* (*a fragrant stuff*); then that (image) . . . he gets free (from disease and) through the incense of *guggulu* (*a fragrant gum resin*) he becomes (restored) to good health. Above the figure . . . svâhâ ॥ The physicking (should be had recourse to) in the dark half of the month, on the fourteenth day, by a person after he has fasted for three nights and (put on) white (raiment), . . . a wick should be made of the cord of a *duṇḍala* (churning-stick?), (and) a lamp lighted with linseed oil, . . . and the spell should be repeated throughout the whole night. Then . . . they see . . . ॥ With red lac he is to form a ball representing the head of *Kilikilaka* (*i. e.*, *Siva*) . . .; then having rubbed it with a *tôla* of . . ., with that ball in sifted fine grain . . .; the process is repeated once more; every thing is brought in one's power; then in a thoroughly cleaned, . . ., and it becomes . . . ॥ Taking the eyes of (*tunḍa*) *Kilikilaka*, he should grind (them), he ladles . . .; with . . . anointed with the preparation of flowers . . . they can see a *piśâcha* at a distance of a *gavâchhyâ* (*gavyâti*?, or perhaps the name of a *piśâcha*); and with that power of man . . . he can kill three . . . *piśâchas*; (then) taking a bag from the side of the person that does penance

From the above extract it would appear that the work treats of medical charms. It is written in the now well-known species of "mixed" Sanskrit, anciently the prevailing literary language in North Western India and the countries beyond.

Part IX. See Plate III, fig. 3, 4, 5. This manuscript consists of 25 leaves. Some of them show a numbering on the left hand margin in very fine and minute figures. Thus, of the three figured leaves, fig. 3 shows the number 30, fig. 4, the number 33, and fig. 5, the number 36. This circumstance proves that the manuscript is not completely extant, though from the fact that one of the extant leaves is only inscribed on one side, it may be concluded that the manuscript is complete at the end, and that some (10 or 12) of the initial leaves are wanting. Unfortunately the last leaf is too damaged to be read.

The leaves are mutilated at the lower corners, but sufficient is extant to show their full size. It is $5\frac{1}{4}$ by $2\frac{1}{2}$ inches. Each leaf has six lines. Unfortunately, the writing is extensively obliterated, owing to the circumstance that the thick arsenical coating of the leaves, on which the letters were written, has been greatly damaged, apparently, by damp. In many cases the leaves firmly adhered to one another, and on separating them, the coating, together with the letters which it bore, came off. On the original leaves, portions of the obliterated letters, are still sufficiently visible to permit of their being occasionally identified;

III. (Leaf 36. Fig. 5).

- [illegible]

The reverses of the figured leaves do not yield sufficiently satisfactory readings to quote. But I add transcripts of two other leaves, both obverses and reverses,—of as much as is legible.

IV. (Obverse.)

- 1, [. .] . . [. ]
- 2, [. .]
- 3, [.] . pi ssau lk(kh)a sô k(kh)am rka tha shshi ptsâ [. . .]
- 4, . . lyê—ma lk(kh)ô rsa dha ksha llô a sú sa nâ pa llô—ka . .
- 5, [*pra-pu-*]nda-ri-kha—ka-tu-ka-rô-hi-ni—a-sva-kâ-ndha—dê-va-dâ-
ru—pi ssau .
- 6, a-pa-mâ-rga — kô shkô .o .m rkô .ô [*shsh*]ô skô ta . . — .

V. (Reverse.)

- 1, . *lkkhê* rsa *tri* (kh)am̃ . llye pa kî *yê*—pi *lk(kh)a* rsa ra nka tsi *sau*
shpa ka ya
- 2, kâ-kô-ri — kshî-ra-kâ-kô-ri — pi-ta-ri — kshî-ra-pi-ta-ri — smu ri
ysâ rña yañ
- 3, kshî *yê*—mi tstsâ bh(b)a rka bbbha llê—kri nka ñña *yô ttea* lau
pê kâ
- 4, [*pê*] *yâ* mu sai tô sa kâ tsô pra ka ra . *sna* [*.* .]
- 5, . . *ka ra*—*yañ* [*.* . . .] a . [*.*]
- 6, [*.* .] [*.*]

VI. (Obverse.)

- 1, *kô lyê nka rya pi ssau ysû rña yam kshî yê—sé ku ñcha ga shshî
yam lyyê sam shpañ*
- 2, *rka bbbha llê—yô tsa trî (kh)am bha llê—(tu) mêm kâ tsa sa lau
pê yâ mu sai tē sa*
- 3, *ka tsô ma lya (kka) tha skê dha (ri) mâ ylâ rya ñ a-sva-ga-
[ndha] in—[a-pa-]*
- 4, *mâ-rga — ta-ka-ru — pra-pu-nta-ri-kha — ma-ñcha-shtha — ni-lu-
[tpâ-u —]*
- 5, *[. .] . in . . ê [. . .] . tth — kô stê — pô [. . . .]*

Citaions.	Name in Weber MS.	Sanskrit.
No. IV, line 6	a-pa-mâ-rga (also No. VI, 3 and below)	apâmârga
No. V, line 2	kâ-kô-rî kshî-ra-kâ kô-rî pi-ta-rî (see bi-dâ-rî, below) kshî-ra-pi-ta-rî	kâkôli kshîra-kâkôli vidâri kshîra-vidâri
No. VI, line 3	a-śva-ga-ndhañ (see No. IV, 5)	aśvagandhâ
No. VI, line 4	pra-pu-nta-rî-kha (cf. Nos. I, 2, III, 1, IV, 5) ma-ñcha-shṭha (cf. No. I, 2)	prapaṇḍarika mañjishṭhâ
No. VII, line 4	śa-kka-ṛi śa-rsha-pa ku-shṭha-kha	śarkurâ (?) sarshapa kushṭhaka

On some other leaves I have found the following :

a-mpri-ta-pâ-tṛi	amṛita-patra ²⁵
a-va-mâ-rga (see a-pa-mâ-rga above, No. IV, 6)	apâmârga
ka-ru-ṇa-sâ-rî	kâlânusâri
kshî-ra-bi-dâ-rî	kshîra-vidâri
ta-ma-la-pâ-tṛi and ta-ma-la-pâ-dha-ṛi	tamâlâ-patra
tri-phâ-u 3	triphala 3
pi-ppâ-u	pippala
pu-ta-na-kê-sî	pūtanâkêsi
pu-na-rna-ba	punarnavâ
pṛi-ñka-ra-chañ	bhṛiṅgarâja
pri-ya-ñku and pṛi-ya-ñgu	priyañgu
bi-dâ-rî (see above, No. V, 2)	vidâli or vidâri
bi-la-pa-tti	vila-patra or vilva-patra ?
bha-lla-ta-kha	bhallâtaka
ma-hâ-mê-dha	mahâ-mêda
mê-dha	mêda
lô-tṛi and lô-dṛi and lô-tta-ṛi	lôdhra
śâ-ri-ba	śârivâ
śi-ri-sha-pu-shpa	śirīshapushpa
śai-lô-ya-kha	śailôyaka
sa-rja-ra-sha	sarja-rasa
styô-ni-ya-kha	sthaṇḍeyaka

The spelling of such words as *tri-phâ-u*, *ni-lu-tpâ-u*, *pi-ppâ-u* is very curious. The identity of the former is clearly established by the numeral figure 3 which I have found following the word in one place, and which is intended to explain its meaning "the three myrobalans." The liquid consonant *l* is apparently omitted, and the vowel attached by a side-

²⁵ Or perhaps for Skr. *amṛita-patra*, a bye-form of *amla-patra*, a kind of sorrel.

stroke to the preceding akshara. This side-stroke is also used with final consonants, when they have no inherent vowel; they are, then, attached to the preceding akshara by a side-stroke and written a little below the line,—a practice which is well-known in ancient Sanskrit writing, being used instead of the modern *virāma*. Thus in *pra-pu-nta-rikh* (No. III, 1) and *pra-pu-nta-ri-kha* (Nos. IV, 5 and VI, 4) we have an instance of the same consonant (*kh*) being written with and without the inherent vowel (*a*).

Part IX of the Weber MSS. appears to me to belong, both with regard to characters and language, to the same class of writings as the Kashgar manuscript, published by Mr. Oldenburg. The latter, too, is not only written in what I have called the square variety of the Central Asian Nāgarī, but it also shows occasional Sanskrit words interspersed in the text. Thus we have *brāhmaṇam* in the 5th line of the reverse (syllables 7-9), and again, on the obverse, *mahākaraṇi* (Skr. *mahākara*, a name of Buddha) in the 1st line (syllables 14-17), *vājirēṇīkusha* (Skr. *vajrāṇkūśa*) in the 4th line (syllables 10-13), and *brāhma* in the 5th line (syllables 8 and 9). More doubtful are the following: reverse, line 3, *bhṛīṅgārēṇku* (*bhṛīṅgārāṇka*?) and *sāstrēṇi* (*sāstra*?), line 4 *nērvānam* (*nirvāṇam*); obverse, line 1, *ēṇku* (*aṇka*?), line 3, *āstrēṇi* (*astra*?), and further on *klēśa*. Quite certain is the occurrence of numerals. In the obverse, 2nd line, 74 (**73**), 4th line 75 (**74**); in the reverse, 1st line, 77 (**72**), 3rd line, 78 (**73**), 5th line 79 (**73**). This order shows, that the pages are wrongly placed in Mr. Oldenburg's plate. The lower part is really the obverse page of the leaf, and the upper part, the reverse.

The following is my reading of the Kashgar MS., observing the proper sequence of the pages:—

Obverse.

- 1, pa . tsūc kta shshê c-ñku khâ jri a kau ta chchê—ma-hâ-ka-rum
shê khai pē pē ŋya chchê pē shpim nu—dha ryâ yknê ymê ttsê
smô ŋa shshê mi na nâ só [—]
- 2, shshê yai nu stmau shūa tkha lūc shshê pi su mē rttse mrâ chnê
70+4 pō yēi ŋūa shshê tkhê ylai ŋām ktê nē stya ltsê sai tsa
lkâ shshê ŋchâ nai sai rñê śchya shshê [—]
- 3, syi shshēm â-strēm ŋa ○ ktê tsa kha khâ rpô — klê-śa tma
shshēm chēm lām tna sū rēm ttpō nam kshê ŋchai — dha lskô
shshê chau khê ma vi trēm śa . shshê ŋchai . [—]
- 4, tma sa 70+5 ŋām kchyēm yô tkhēm tsa yai nu vâ-jrēm-ñku-sha
rnê nê — ylai ŋām ktñê khê shsa ka pō sta khrô chchê té lki
nê — krēm tpê [—]

- 5, ysha sta — khê smai klyau nka sta brâ-hma ññai khê rtsyai pô sai shshê — yâ dha shshê ñichai i lai ña ktêm pô ylai ñam ktê tsa shtsa pra lya shsha rklê [.....—.....]
- 6, pē lai ktē shsha na khrō tsta na — kham rpō rmēm skkha tma pañ lsko shsha na rtau sna yâ kē — bhai shshê tsa kham ttrē & rskō rshēm yâ [—.....]

Reverse.

- 1, sô kâ nê nê rvâ tshai — khâ ra sta ñis ykhâ rehla klê nê tñā ktô pkhâ ñimtsa ya mñā rām nê . . la tma . 70+7 â ñmâ lâ shlñê shshau . shpâ [.....—.....]
- 2, pē shshê kha tsyâ strô nau su pē ñya chchê — tkham tsa ññê jaṭ snai ykô rñê shsha yâ kô ktsê ñô la lam shka sta rya pô ysê ññê shshau rtsa sê ktsau ña [.....—.....]
- 3, bhri-ñgâ-rê-ñku²⁶ sô ○ kô sâ-strēm i tē mai tta rshshê 70+8 pū vñēm ktô shshê tkhê bra mñam ktê spâ lmēm snai mē nâkh — yai tmu tha ktau tra [.....—.....]
- 4, nê rmi tyâ mshê ñichai khnô lmê nô ktya knê sa sta rēm — nê-rvâ-nam shshai kô tsa sai shshê dha rkan chai em shkê tatsēm ta ttha shshê . pa khâ kta [.....—.....]
- 5, spu kha kô ya khâ spa brâ-hma-pañ 70+9 â mprê tma shsha na . . tma štkhâ ra a kshâ sta — klai namttb ša ma škamttb ka rsa tsi . . khâ . [.....—.....]
- 6, . ru tē pa . mâ ga ri — gâ ñpē lai ktô shshai kēm tsa cham rkâ sta a sta ryai — pô pē sai shshê ka llô ynâ shtsi pē lai . . ñai—

It will be noticed that a mark of interpunctuation occurs at regular intervals, *i. e.*, after every 13th syllable; thus marking off sections of the text of 13 syllables each. Taking this as a basis of calculation, it will be found that the text between each pair of consecutive numbers is made up of six sections; and that from 9 to 13 syllables in each line are lost at the sides of the leaf. The space required for these would be $3\frac{1}{4}$ to $4\frac{1}{4}$ inches. The leaf, in its existing state, measures 14 to $15\frac{1}{4}$ inches in length. The leaf, in its original state, accordingly, must have measured about $19\frac{1}{2}$ inches, allowing a small margin on either side.

The fact that the text is divided and numbered in regular paragraphs renders it probable that the work is composed in some kind of poetry, each paragraph forming a verse or stanza of six sections of 13 syllables each. I am not aware of any Sanskrit verse of this description. I suspect, that the language is some kind of Mongolian, with Sanskrit technical terms interspersed. The nature of the latter, perhaps, suggests that the work belongs to the Buddhist Tantrik class of literature.

²⁶ Or perhaps read *ñri-ñgâ-rê-ñku*.

On the Early Study of Indian Vernaculars in Europe.—By

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Some years ago, while perusing an old number¹ of the *Calcutta Review*, I chanced upon the following sentence. 'Antonio, a Roman Catholic Missionary at Boglipur on the Ganges, translated the Gospels and the Acts into the dialect of the people of that district.' This was given as a quotation from a certain Dr. John, who wrote in 1809, and would refer to a translation of a portion of the New Testament into the local dialect of the people of Bhágálpur some years previously, that is to say at the end of the 18th century. The first translation of the Bible made by Carey was published in 1804 (into Maráthi), and most of the succeeding ones appeared in the second decade of the 19th century, so that so far as I am aware Father Antonio's version was the first translation of the Bible into any language of Northern India, and, curiously enough, it must have been made into Maithilí, a language into which the Bible has never been translated since.²

At the time when this statement of Dr. John caught my attention, I was occupying a good deal of my leisure time with the vernaculars of Bihár, and it seemed to me that, if I could get hold of Father Antonio's translation, it promised to afford me information regarding the condition of Eastern Maithilí a century ago. Such evidence would have been an invaluable witness on the subject of the rate of growth of the Vernacular dialects of North India.

I accordingly communicated with Bhágálpur, and learned that Father Antonio had been a Capuchin Missionary there at the end of the last century, and had thence gone to Patná. No trace of the alleged translation could be found. I enquired at Patná and at Agrá, whither he had subsequently gone as Bishop, with a similar result. From Agrá he returned to Rome. Being at Rome in the year 1890, I called at the College of the Congregatio de propaganda Fide, and, though a total stranger, when I communicated the object of my search, was most kindly and hospitably received, and given every assistance in searching through the magnificent Oriental Library attached to the Congregation. My efforts were in vain, so far as the immediate object was concerned, for no trace of the missing translation could be discovered, though I saw numerous translations into Nepálí of about the same date. Indeed the Jesuit Fathers, who first entered Nepál in 1661,³

¹ Vol. V, p. 722, June 1846.

² I omit from consideration a few detached extracts translated by the late Mr. John Christian.

³ The pioneers were Grüber, and Donville. They were succeeded by Ricanote,

appear to have made the language of that country their own in a very special manner. The translations which I saw in Rome, were on a far higher grade of excellence, than those into many Indian languages which issued from the Serampore press more than fifty years afterwards. Father Antonio's Bhágalpurí translation, however, could not be found, and there appears little doubt, but that it was destroyed in one of the disturbances in Patna, when the local mission of the Roman church was burnt down by the '*barbari id est badmashi*,' as a quaint Latin chronicle which I was permitted to see at Patna described them. My inquiries at Rome, however, gave me the clues, by the help of which I have traced the information which follows, and which may be found interesting, as showing glimpses of the growth in Europe of the knowledge of Indian languages.

In the early part of the eighteenth century, Maturin Veyssiére La Croze was in charge of the royal library at Berlin. This remarkable scholar, a profound student in oriental lore, as it was then understood, carried on a copious correspondence with nearly every learned man of his time. This correspondence was published in 1742-46 at Leipzig by Uhl, in three closely printed Latin volumes of about three hundred pages each, under the name of the *Thesaurus Epistolicus Lacrozianus*, which is still obtainable in old bookshops. I do not know a more entertaining book than this collection of letters on many subjects. The Latin is throughout easy, and the manner in which the various subjects are treated compels the reader's admiration for the learning and ingenuity displayed, while now and then some pit-fall of error¹ into which the wisest has fallen, warns students of the present day to avoid generalizations till we have made fast and firm the data on which we base them.

In the year 1714 we find David Wilkins writing to La Croze from Amsterdam, asking him for assistance in compiling a collection of translations of the Lord's Prayer² into as many languages as possible, which Wilkins was publishing in conjunction with John Chamberlayne of London. Amongst other languages mentioned, Wilkins³ specially states

a Capuchin, one of whose successors, Father Pinna, wrote a Catechism in Urdú, which, he dedicated to the Rajah of Betiá. Father Pinna died in Patna in 1747.

¹ E. g., when La Croze maintains that all languages are derived from Hebrew and cites the Maráthí alphabet in proof thereof (Th. E. La C., III, 65).

² Mott had published a similar collection in London fourteen years previously, and Chamberlayne's '*Orationum dominicarum sylloge*' was a revised and enlarged edition of this.

³ Loc. Cit. I, 369, '*alphabetum Singaleum, Javanicum, et Bengalicum*' The Bangálí version is quite unintelligible. It is reprinted in the *Sprachmeister*, v. post.

that he intends to give for the first time specimens in the Singhalese, Javan, and Bangali languages. This request incited La Croze¹ in November of the same year to write a long communication to Chamberlayne dealing with the subject of the study of languages in general, and vindicating comparative philology from the charge of inutility. He then proceeds to describe briefly the inter-relationship of the various languages as then known to him, and coming to India says, 'I have, however, little to offer concerning the alphabets of this country, except the conjecture that they are derived from that called *Hanscrit*.' The oldest letters of the Brachmans, he adds, can hardly have sprung from any source except from those of the Persians or Assyrians. But, as already remarked, the characters used by the other Indians are most probably derived from those called *Hanscrit*, which are used by the Brahmins, for on the one hand it is from them that the other Indian tribes imbibed their superstitions, and, on the other hand, Xaca, who laid the bonds of false religions on the peoples of the East, was himself brought up amongst the Brachmans. Moreover the order of the alphabet is the same amongst the Brachmans, the people of Malabar, the Singhalese,² Siamese, Javans, and even of the language of Bali, which is the sacred tongue of Laos, Pegu, Cambodia, and Siam.

This change of the initial S of Sanskrit, into H is worth noting from a philological point of view. It seems to point to an authority coming from Eastern Bengal where *s* is in popular speech pronounced as *h*, and no doubt La Croze's immediate source of information was Bernier's travels (1666 A. D.). As Yule and Burnell in the Anglo-Indian Dictionary point out, the term Sanskrit did not come into familiar use till the last quarter of the 18th century. I am in doubt as to what religious reformer is referred to under the name of Xaca. Was it Śākya Muni?

So much for Chamberlayne's *Sylloge*, which was published early in 1715. It did not give great satisfaction to La Croze, for he complains³ in one of his letters that Wilkins, *more suo*, had so 'edited' a Tartar specimen which he had given him, that the donor could hardly recognize it.

In the following year 1716, Ziegenbalg⁴ a Danish Protestant Missionary writes from London. It is evidently a letter in answer to inquiries made by La Croze. The word Brachmann, says Ziegenbalg,

¹ L. C. III, pp. 78 and ff. What letter writers there were in those days! This Epistle covers 17 pages of small type.

² Ceylanenses.

³ L. C. III, 20.

⁴ L. C. I, 281.

is wrong, and is not understood in India. The correct word is *Braman*. So also the language of the Bramans is never called *Hanscrit*, the only name used by Bramans themselves being *Kirendum*. Here the writer shows that his knowledge is confined to Southern India, *Kirendum* being an attempt to depict the Tamil pronunciation of the word *Grantham*.¹ He adds that the Bramans claim that this tongue is the root of all Indian languages such as the *Malabaric*, the *Wartic*, (*i. e.*, Telugu), and the *Ziglesic*, which are spoken on the Malabar and Coromandel coasts, but he cannot believe that others such as the Malaic, the Mogulic, &c., have any connexion in it. As for Chamberlayne's *Sylloge* it is full of errors in the versions into the languages of Malabar, and when he returns to India he will send La Croze some more correct specimens, correctly translated by the boys of his Malabar school.

In September 1716 commenced La Croze's voluminous correspondence with Theophilus Siegfried Bayer, then residing at Leipzig, and subsequently at St. Petersburg, whose name will occur several times in these pages. The early letters afford few points of interest to Indian students. They deal principally with Tangut, Mongolian and Chinese. Incidentally La Croze² complains of the vast extent of his correspondence. People write to him from nearly every part of Europe, to the great damage of his time and of his purse.

In March 1717 Bayer³ ventures to doubt La Croze's theory that the Sanskrit alphabet was derived from Persian, and the latter but faintly defends his opinion, though strongly maintaining that the modern languages of India are derived from that of the Brachmans.⁴

Here there is an interval of some ten years, during which Bayer moved his residence to St. Petersburg, and the year 1717 may be taken as closing the first stage of attempts at a scientific inquiry into Indian languages. Men like La Croze and Bayer had to depend upon the untrained observations of travellers like Bernier, or to chance communications from Missionaries on leave in Europe. In their correspondence, the only vernacular of Northern India which they mention is Bangali, and I can find no earlier mention of that language in any other work, though Yule⁵ quotes the word as meaning a native of Bengal, from Barros, who wrote in 1552. They make no reference to Hindí or Hindústání, though the word "Hindústán" had been used as meaning the vulgar language of India for more than a century.⁶ Probably the

¹ Cf. Valentijn (1727) (*Oud en Nieuw Oost Indien*), '*Girandam* by others called *Kerendum*, and also *Sanskrita*, is the language of the Brahmins and the learned.' Quoted in Hobson-Jobson, s. v. *Grantham*.

² L. C. III, 59. ³ L. C. I, 16. ⁴ L. C. III, 22, 23. ⁵ Hobson-Jobson s. v.

⁶ Hobson-Jobson s. v.

fact that it was a purely vulgar language, and was considered a mere jargon, led to its being neglected.

The foundation of the Imperial Academy of Sciences of St. Petersburg, on the lines of the great French Academy, were laid by Peter the Great, and it was formally opened by the Empress Catherine. The most learned men of Europe (amongst whom was Bayer) were invited to join it, and finally it was placed in a permanent position by Peter II. The first part of the transactions, relating to the year 1726 was published in 1728.¹ These two volumes are very rare, nearly all having been destroyed in a fire which consumed the Imperial Academy and Printing Offices in 1741.

In the year 1727 Daniel Messerschmid, who had been deputed by Peter the Great to explore Siberia, returned to St. Petersburg, and amongst other curiosities brought with him an inscription, and a Chinese printed book. These were made over to Bayer, and he describes them in the third and fourth volume of the transactions.² The inscription consisted of two short lines, one being in Brahmanical and the other in Tangut letters. It is reproduced here.

तञ्जमतिवद्वनैर
॥ॐ म रे प ड्ड ड्ड ड्ड ॥

It will be recognized that the first line (which Bayer calls Brahmanical) is in the pointed variety of the Devanāgarī alphabet used by the Buddhists of Thibet, and called Lāntsha. The second line is the ordinary Thibetan character. Bayer with the aid of his knowledge of Manchu, and of the book to be subsequently described, deciphered this as '*Ong ma ni pa dme chūm chi.*' but was unable to translate it. Messerschmid, he says, told him that it was one of the commonest prayers of the Tanguts (*i. e.* Thibetans), and meant 'God have mercy on us.' This decipherment of the well-known Buddhist formula, *Om, mani padme,*

¹ Commentarii Academiæ Scientiarum Imperialis Petropolitane. Tomus I, Ad Annam cl. locc xxxi. Petropoli, Typis Academiæ cl. locc xviii.

² For the years 1729 and 1729, and published in 1732 and 1735 respectively.

³ Pronounced like a Greek *χ*.

hūm,¹ though its translation was incorrect, marks the first step in a new stage of the study of Indian languages in Europe. For the next few years, European scholars attacked the languages of Northern India through Chinese and Thibetan.

The other curiosity, the book which consisted of eight leaves, had been printed in China, and may be considered as the Rosetta stone of these explorers. It gave in parallel lines an entire syllabary of the Lántsha Devanágari alphabet, with a transliteration into Thibetan, and into what Bayer calls Mongolian. A reference to Ballhorn's Grammatography will show that these last letters are not in the Mongolian character as now accepted, but more nearly resemble those given as Manchu. They are evidently some Tartar alphabet. A facsimile of the first page and a half² is given on plate V. Bayer's first procedure was to establish as far as possible the Thibetan characters. This was an easy task, for the language was already partly known to him, and he had other Thibetan students and books at his command. Then with the aid of this and of other specimens, he established the Manchu transliteration, and finally from these two, he was enabled to make a very fair attempt at transliterating the Devanágari. In the plate, I have given the transliteration fixed by him. From this he deciphered the *Om mani padme hūm* of the inscription. It will be observed that the transliteration is incorrect in many particulars.

Having thus made out the Lántsha alphabet, Bayer sent a copy of it to Schultz, a missionary in Madras, and was gratified to learn that the letters could be read by Bráhmans of Northern India.³ Schultz, himself, to judge from the specimens he gives, cannot at that time have known Sanskrit, or, indeed, any Aryan Indian language. He spells the name of Banáras बाणार or बनारसे, and talks of बाणार नाचरी. He, however, describes three alphabets and gives specimens of them, the Devanágari, the 'Balabandu,' and the 'Akár Nágari.' They have evidently been sent to Bayer just as they were written down for Schultz who could not read them. By 'Balabandu,' is meant Maráthí, but the three alphabets are really all Devanágari, as written by different hands. Schultz also gave instructions for pronunciation. Some of them may be quoted.

i breue, lingua ad dexteram inclinata.

i longum, lingua ad sinistram mota.

¹ See J. A. S. B. for 1892, Part I, pp. 30—33.

² There were two lines to a page, but as three lines comprise the entire alphabet of simple letters, I have given a page and a half on the list, in the following Bayer.

³ 'Brahmanes extraneos et peregrinos.'

breas, recto ex ore protrahitur.

longum, quasi duplex, sono in altum prolatum.

dha (d) *d* formatur lingua quasi apoplectica, vt salius ad palatum opem ferat, *h* admodum auditur: ceterum quasi aliquod *n* præmittitur, quod in primis sentitur, quoties vocalis præcedit, e. g., *ba-ndha*, legitur plane *ban-dha*.

Truly our forefathers must have felt the same difficulties with the cerebral letters, that we have now-a-days, and the 'apoplectic tongue,' is still found in the mouth of many a griffin.

Bayer relates how a certain Calmuc Ambassador named Bordon, who was then in St. Petersburg, helped him to acquire this pronunciation, and concludes with a brief notice, received from India, of the Maráthi, Gujaráti, and Maura languages. By the last named, he apparently means Urdú, what the English subsequently called Gentoo, or Moors. All this time he was conducting an active correspondence with La Croze, in which, not only does the Chinese book find due mention, but we meet one of the earliest efforts of comparative philology, the first four numerals in eight languages ¹ During the next ten years the two friends now and then refer to Indian languages, and to the last La Croze adheres to this old error that the Maráthi alphabet is derived from Hebrew.

In 1745, was printed the first grammar of Hindústání, which I have seen noticed. It was written by the missionary Schultz already mentioned. I have not had the good fortune to see the work itself, and my only information concerning it is the title in the Catalogue of M. Garcin de Tassy's Books, 1879, quoted by Col. Yule in his *Anglo-Indian Dictionary*.²

In 1748 was published at Leipzig the *Orientalisch-und-occidentalischer Sprachmeister*, compiled by Johann Friedrich Fritze, and dedicated by him to Schultz. This very curious work contains accounts of over a hundred alphabets from all parts of the world, followed by some two hundred translations of the Lord's Prayer. A good deal of the description of the alphabets of India was contributed by Schultz, whose account of Hindústání is especially interesting and full. This is a general description of the composition of the Urdú language. Attention is drawn to the large number of Arabic and Persian words in its vocabulary, but the student is warned against supposing that it is in any way derived from those speeches. The ordinary Persian alphabet is given, but there is

¹ Thesaurus I, 58. The eight languages are, 'Camacinienses, Arincenses, Camteschatquenses f. Yedsenses et Coraeenses, Tangutenses et Tibetenses (1 = *Dscyk*, 2 = *Xy*, 3 = *Suum*), Persæ, Mogulenses Indi (1 = *Hicku*, 2 = *Gnu*, 3 = *Tray*, 4 = *Tzahr*), Cadelentes, Letti.' Who are meant by the 'Indian Mughals?'

² S. V. Hindustanee.

no mention of the Indian cerebralized four dotted letters of that character. Among the Indian alphabets described may be mentioned, Bangálí, Tamil, Grantham, Telugu, Burmese (called Pegu), Maráthí, Devanágari (three varieties, borrowed from Bayer), and Singhalese. There is also a comparative table of fifty common words, in twelve different Indian languages, including Sanskrit, Canarese, Konkani, and Gujrátí.

The versions of the Lord's Prayer are collected from widely different sources. Some are very fair and legible. Others are grossly incorrect. The Bangálí translation, which is taken from Wilkins' sample given in Chamberlayne's *Sylloge*¹ is almost worth reprinting as a curiosity for the number of seemingly impossible mistakes it contains. In fact it is quite illegible and unintelligible to every native of Bengal to whom I have shown it. It has evidently been made by some person who got a copy of the alphabet and a general description of the language and then 'greatly dared.' Even his knowledge of the alphabet is incomplete. For instance, he knew that the form for a non-initial *e* is *ç*, but did not know that it must come before the consonant to which it is affixed. Hence for *de*, instead of writing *ç*, he wrote *çç*. Other similarly gross blunders occur in the writing,² and as for the language, when deciphered, it is not intelligible. Only here and there can a Bangálí word (usually wrongly spelled) be recognized. The incorrectness of this version is very curious, for under the head of alphabets, the Bangálí character is given with very considerable accuracy. Most of the other translations are fair enough. Amongst them I may mention, Hindústání by Schultz, (Persian character; Commences, *ásmán po* (misprint for *par*) *rahtá, so hamamrú báp*), 'Brachmanic' (the Latin version transliterated into Devanágari), Sanskrit (Devanágari. Commences *úrdhva-loka-sthito mat-pitah*), 'Akar Nagarika ex Caschia' (language, Bhojpurí; character, Devanágari), Gujrátí, Goanese, Tamil (five versions), Telugu, Sanskrit (Telugu characters), Maráthí, Canarese, Sanskrit (Grantham characters), Maráthí (current hand), Singhalese, and Burmese (Pegu). Altogether the *Sprachmeister* is a fairly correct and interesting compilation.

It held the field as an authority on Oriental languages till 1771 when there appeared, from the press of the College de Propaganda Fide, a Latin pamphlet entitled '*Alphabetum Bramhmicum seu Indostanum Universitatis Kasi*'. As its name implies it is a description of the Devanágari alphabet, and is the first book printed in

¹ No wonder La Croze lamented over Wilkins' editing.

² For instance the initial form of vowels is sometimes used instead of the non-initial form, and one consonant is used for another. Thus *bappá*, father, is spelled *bámmaa* बाय्मआ.

Europe from types in that character.¹ It has an interesting preface summing up the knowledge on Indian subjects gained up to that time. Mention is made of a MS. *Lexicon Linguae Indostanicae*, 'Quod Auctorem habet Franciscum M. Turonensem,' a monk of the Surat Mission, which was written in 1704 A.D.² There is also a careful and accurate description of the various appliances adopted in India for writing, and the manner of their use. One hundred and nine pages are devoted to a full account of the Devanāgarī alphabet, as written 'at the University of Kāśī.' This is followed by an account of the Kaithī, or (as it is called in the book) the Nāgarī alphabet. For this character also types were cast, more than a hundred years before they were again cast, under the supervision of the present writer, at the Bengal Secretariat Press. We have then a chapter on numerals, and the little volume concludes with two versions of the Lord's Prayer,—one a transliteration of the Latin into Devanāgarī, and the other a translation into very fair Hindī, followed by an *Ave Maria*, and Apostle's creed in the latter language.

In the following year (1772) appeared in London, Hadley's '*Grammatical Remarks on the Practical and Vulgar Dialect of the Indostan Language commonly called Moors*'. An account of this work will be found in the Anglo-Indian Dictionary.³ It is a very incomplete work, and far behind the one to be next noticed. As Col. Yule gives full particulars of this, the first English Hindūstānī Grammar, a passing notice will suffice here.

Six years subsequently, in 1778, appeared the first attempt at a scientific treatment of Hindūstānī. It was in Portuguese, and the title page runs as follows:—*Gramatica Indostana a mais vulgar que e practica no Imperio do gram Mogol offerecida aos muitos reverendos Padres Missionarios do ditto Imperio em Roma MDCCLXXVIII na Estamperia da Sagrada Congregação de Propaganda Fide.* Like the Alphabetum Brammhanicum, this work was published in Rome. It is altogether an excellent work: and the author or authors had evidently a good grip of the language. The transliteration is scientific, though on a system widely differing from that of Sir W. Jones. As an example '*tum ko bahut piār kartā hūn*' is given as '*tūm kō bōhot pēar cartahū.*' For the first time attention is drawn to the use of the particle *ne* with the past tenses of transitive verbs, and the difficult question of compound verbs is treated with

¹ The *Sprachmeister* is a collection of copper plate engravings.

² I searched for this in the College Library at Rome, but could not find it.

³ S. V. Moors.

considerable success. It may be noted that the various postpositions *há, ka, lá, ko, &c.*, are treated as declensional forms of the indefinite article, which are placed after a substantive, instead of before as in Portuguese.

This concludes my notice of the 'Early Study of Indian Vernaculars in Europe.' A good deal had been done, but the results had hardly penetrated to India. In 1783, the judicious Colebrooke wrote from Calcutta to his family 'you recommend my being assiduous in acquiring the languages. It is what I intend, but there is no danger of my applying too intensely. The one, and that the most necessary, Moors,' *i.e.*, Hindústání, 'by being not written, bars all close application; the other, Persian, is too dry to entice, and is so seldom of any use that I seek its acquisition very leisurely.'¹ The following year (1784) saw the founding of the Asiatic Society, and it is one of our most legitimate sources of pride that it took up the clue where it had been dropped by the Roman Catholic Missionaries, and under the influence of men like Sir W. Jones, Wilkins, and especially Gilchrist, the Indian Vernaculars ceased to be despised for 'not being written' and became the object of investigations which have continued to the present day.

The sacred lamp so lit has never been extinguished, and the greatest living authorities on the subject, Mr. Beames and Dr. Hoernle, are still, I am glad to say, Members of the Society.

ADDENDUM.

LA CROZE.

I am indebted to Mr. Quaritch for the following extract from the *Nouvelle Biographie Générale*, which gives a full account of this eminent orientalist.

VEYSSIERE DE LA CROZE (Mathurin).—orientaliste français né à Nantes le 4 Décembre 1661, mort à Berlin le 21 Mai 1739. Dégouté de l'étude par la sévérité mal entendue de son maître, il s'embarqua à quatorze ans, pour la Guadeloupe, où son père négociant éclairé, avait des relations d'affaires. Pendant le séjour qu'il fit dans cette île, il acquit la connaissance des langues anglaise, espagnole et portugaise. A son retour il entra comme novice dans le couvent des bénédictins à Samur (1677), et y prit l'habit (1682). Bien que la vie studieuse de cette ongrégation fut de son goût, il eut des démêlés avec le supérieur et fut menacé de la prison. Effrayé du sort qu'il croyait l'attendre, il réussit à

¹ *Life*, p. 13.

s'évader et gagna Bâle (1696) où il embrassa le protestantisme. En même temps il prit le nom de la Croze, que était celui d'un petit bien de sa famille. Ayant passé à Berlin, il devint bibliothécaire de l'électeur (fevr. 1697) aux modiques appointements de 200 écus par an. Il se chargea aussi de l'éducation du margrave de Schweldt. Leibniz avec qui il était lié, le fit nommer professeur à l'université de Helmstädt; mais il fallait pour remplir ces fonctions faire acte de lutheranisme; La Croze se refusa à ce changement de confession. Bientôt après, on lui confia l'éducation de la princesse royale, depuis margrave de Baireuth. Son auguste élève fit augmenter son traitement de bibliothécaire et lui procura la chaire de philosophie au Collège français (1724). Dans son vieillesse il fut assailli par des affections fort graves, la gravelle et l'hypochondrie, résultat de son application excessive à l'étude. Il mourut à soixante-dix-sept ans, d'un mal à la jambe. Doué d'une mémoire prodigieuse et d'un esprit pénétrant, La Croze fut un érudit fort distingué. Il ne lui manqua pour devenir un homme éminent qu'un jugement d'une plus haute portée. Ses qualités morales, non moins que ses connaissances étendues, lui firent de nombreux amis, parmi lesquels il faut citer Spanheim, Bayle, Beausobre, Lenfant, Leibniz, Cupper et A. Fabricius. On a de lui: Actes et titres de la maison de Bouillon; Cologne (Berlin) 1698 in-12: Observations critiques sur les pièces employées par Baluze dans son histoire de la maison d'Anvergne—Dissertations historiques sur divers sujets; Rotterdam 1707, in 8°: il y en a trois qui traitent: du socinianisme et du mahométisme dont les principes fondamentaux sont les mêmes, d'après lui: du système de P. Hardouin sur l'origine supposée des écrits des anciens: et de l'état de la religion chrétienne dans les Indes.—*Vindiciæ veterum scriptorum contra Harduinum*; ibid 1708 in 8°, réfutation d'une hypothèse qui lui parassait pleine de dangers, et sur laquelle il revint encore dans deux lettres, l'un impr. dans la *Rélation du Voyage littér.* de Jordan, l'autre dans la *Biblioth. german.* t. XXXIII. La Croze s'était imaginé que le paradoxe du P. Hardouin était le résultat d'un complot formé par la société toute entière des Jésuites; sans doute pour détruire le prestige de la littérature ancienne; *Entretiens sur divers sujets d'histoire, de littérature, de religion et de critique*; Cologne (Amst. 1711—in 12) ou quatre entretiens avec un Juif. On y trouve une dissertation sur l'athéisme trad. en anglais, et une critique aussi injuste que passionnée, de l'*Histoire des Juifs de Basnage*;—*Histoire du christianisme dans les Indes*—La Haye 1774 pet. in 8°, et 1758, 2 vol. in 12° trad. en allemand; c'est son meilleur ouvrage. *Histoire du christianisme d'Ethiopie et d'Arménie*; ibid 1739 pet. in 8°; cet écrit est bien inférieur au précédant;—*Thesaurus epistolicus Laceronius*—Leipzig 1743-46 3 vol. in 4°; recueil publié par le professeur

Uhle;—*Lexicon aegyptiaco—latinum*—Oxford 1775 in 4°; le manuscrit de cet ouvrage considérable a été revu par Scholtz, et annoté par Woide qui le fait paraître au frais de l'Université d'Oxford. Chaque mot copte est suivi de son équivalent en grec et en latin, mais sans autre explication (voy. *Oriental und exeges. Biblioth. de Michaelis*, t. I, p. 202, et suivi, et *Recherches sur l'Égypte* par Quatremère);—un grand nombre d'articles dans les publications périodiques. Parmi les ouvrages inédits de ce savant, il faut citer un Dictionnaire arménien qui lui avait coûté de longues recherches; un *Dictionnaire slavon*. et un *Dictionnaire syriaque*.

M. N. en *Nouv. Biographie générale*, 1866.

*Note on the History of the East India Company Coinage
from 1753–1835.—By EDGAR THURSTON.*

When I was engaged in collecting material for my 'History of the Coinage of the Territories of the East India Company in the Indian Peninsula, and Catalogue of the coins in the Madras Museum,'* the records of the Madras Mint were placed at my disposal by the Madras Government, and I expressed a hope that some one would eventually explore the archives of the Calcutta and Bombay Mints with a view to clearing up many obscure points in the history of the coinage of the Company, which constitutes a complicated branch of modern numismatics.

My head-quarters having, by the fortune of service, been temporarily transferred from Madras to Calcutta, the opportunity has been taken advantage of to examine the records of the Calcutta Mint; and facilities for carrying out the research in my spare moments were courteously given to me by Colonel Baird, F. R. S., Master of the Mint, to whom I have to express my great indebtedness.

The Calcutta Mint Committee Proceedings which are preserved in the Calcutta Mint, commence with the year 1792 (more than thirty years after the establishment of the Calcutta Mint), and are, with very few exceptions, continuous to 1835, where my investigations ceased, as the history of the Company's coinage after that year, in which a general British currency was established, is no longer veiled in doubt and obscurity.

Of the Calcutta Mint Records from the establishment of the Mint in 1760 to 1792, I have been unable to find any trace, and this is the more to be regretted, since the history of the coinage during this

* Madras Government Press, 1890.

period is beset with difficulties, the problem being, as pointed out by Dr. Stanley Lane-Poole* to determine where the native coinage ends and the Company's begins.

1753. In a despatch to the Court of Directors dated 12th February, 1753, it is mentioned that "the utmost
Calcutta. secrecy was necessary with reference to the establishment of a mint at Calcutta, as any attempt to effect an arrangement with the Nawáb would be immediately overset by Juggut Sing." A vakil was entrusted and consulted, who said that his master, Hackem Beg, had a son in great power at Delhi, who might be able to get a phirmaund from the king; but that this would be attended at least with the expense of 100,000 rupees, and that, on the arrival of the phirmaund at Cossimbazar, it would cost another 100,000 rupees to the mutsuddys and diwáns of the Nawáb to put the phirmaund in force.

1759-60. The establishment of a mint at Calcutta finally took place in 1759 or 1760, and the following is a translation of the *parwáná*: "To the noblest of merchants, the English Company, be the royal favour. In Calcutta a mint is established. You shall coin gold and silver of equal value and fineness with the ashrafees and rupees of Murshidábád in the name of Calcutta. In the suburbs of Bangala, Bihár, and Orissa, they shall be current, and no person shall demand or insist upon a discount upon them. Dated the 11th of the moon Zihada in the 4th year."

1792. In 1792 a Committee was constituted in Calcutta by order
of the Governor-General, Earl Cornwallis, for
Bengal. superintending the mints and enquiring into the general state of the coinage in Bengal, Bihár, and Orissa. Among the instructions given to the Committee were:—

1. To enquire particularly into the cause of the little progress which had been made towards the establishment of the general currency of the sikka rupees.

2. To ascertain the causes of the batta or discount that had frequently been levied on the exchange of a gold mohar for silver.

3. To report whether it would be advisable to declare the gold mohars, and the multiples thereof, legal tender of payment in the three provinces in all transactions, public and private, at the value at which they were then received and paid at the general treasury and in all private transactions.

* *Catalogue of coins of the Moghul Emperors, 1892.*

4. To enquire into the state of the copper coinage.

5. To state their sentiments on the practicability and expediency of coining the gold mohars, rupees and pice, or either of those coins, with machinery of similar construction to that in use in the mints in Europe.

On May 14th, 1792, the Mint Master informed the Committee that he had received orders from the Governor-General to establish mints at Patna and Murshidábád, to facilitate the conversion of the various species of silver coins current in the several districts into sikka rupees.

A new gold mohar and sikka rupee of the current coinage were laid before the Committee, who were of opinion that the size, shape, and impression of the mohar were perfect, and equal, if not superior, to the newest English guinea, or any of the gold coins in Europe, the die being precisely the same size as the coin, which consequently bore the whole legend, the letters being cut flat, and the coin being difficult to drill without defacing it, owing to its being milled and of proper thickness. With respect to the rupee, the Committee considered that it was very defective both with regard to its size, thickness, and impression, which was struck with a die of twice the circumference of the coin, so that only a part of the impression appeared on the coin. The letters were considered to be too prominent, and liable to injury from common wear and filing, and the thickness of the coin and absence of milling rendered it liable to be easily filed, bored, and defaced. The Committee, therefore, recommended that the rupee should be coined in every respect in the same manner as the gold mohar.

In the Calcutta Mint Committee's Proceedings, 1792, the following historical sketch of the Benares mint (concerning which great confusion exists) by Mr. Barlow, who had been deputed in 1787 to enquire into the trade and coinage of Benares, is placed on record.

Benares. A mint was first established at Benares in the 15th year of the reign of Muhammad Sháh (1734). The assay of the rupee was fixed at 22 chauwals, but, by the connivance of the Superintendents of the mint, it was debased to 32 chauwals at different periods before the 30th and last year of the reign.

During the first three years of the reign of Ahmad Sháh (1748-50) the mint was under the charge of Rájá Balwant Singh, who increased the duties on the coinage by attaching the fees of the officers of the mint, and establishing new ones to the same amount. In the 1st year the assay was kept up to 22 chauwals, but in the 2nd and 3rd years the Rájá farmed the mint to one Nandráam who, to increase his

receipts, debased the coin to 24 and 32 chauwals. The mint records were burnt by Balwant Singh, and no records were kept in the mint until the 17th year of the reign of Sháh 'Alam (1776). The farmers carried away their books in order to conceal the profits they reaped from debasing the coins. The system of farming out the mints, first adopted by Ratan Chand, Diwán to Farrukhsiyar, at length introduced the custom of changing the value of the rupee every year. Those who had payments to make were consequently obliged to carry their old rupees to the mint to have them re-coined into sikkas, the name given to the rupees of the current year. Previous to the 10th year of the reign of Sháh 'Alam (1769), the new coined sikka rupee, after circulating twelve months, fell 3 per cent., and at the expiration of two years 2 per cent. more, at which value it continued under the denomination 'sanwát.' On the 6th August, 1771, this usage was abolished by the British Government, who resolved that the sikkas coined in the 10th year of the reign should be considered as sanwáts, and that those coined in the 11th and all subsequent years should pass in payment at the same value as the sikkas of the current year.

From the beginning of the 4th to the end of the 6th and last year (1754) of Ahmád Sháh the mint was under the charge of Aghá Asad Beg, Kiladár or Governor of the Fort of Chunár. The assay of the rupees was from 26 to 32 chauwals.

At the commencement of the reign of 'Alamgir II (1754) the mint fell to the Vizier Shujá'ud-daulah. During the 1st and 2nd years the assay of the rupees was from 26 to 28 chauwals. In the 3rd year Shujá'ud-daulah made over the mint to his brother-in-law, Mirza 'Alí Khán, who farmed it to Subháu Chand. The assay of the rupees was from 24 to 32 chauwals. In the 4th year the mint was farmed to the agent of an eminent Benares banker, and the rupees were debased to 64 chauwals and, for the first time, half a ratí in weight. Rájá Balwant Singh refused to receive them into his treasury. In the 5th year the rupees were raised to their proper weight of 9 máshás, 7 ratis (or 632 chauwals), but continued at the debased standard of 40 and 48 chauwals. In the 6th and last year of the reign the rupees were debased to 100 chauwals assay (i. e. $\frac{535}{630}$ silver and $\frac{95}{630}$ alloy) and half a ratí in weight.

In the 1st year of the reign of Sháh 'Alam, Shujá'ud-daulah appointed a person on his own part to superintend the coinage, and the rupee was restored to its former weight, (9m. 7r.) and to 26 chauwals assay. During the 2nd to 8th years the assay remained at 40 chauwals. In the latter year (1767) Shujá'ud-daulah, at the recommendation of Lord Clive, resolved to reform the coin. The Benáres mint was, ac-

cordingly, committed to the care of Mirzá Hasan, who engaged to restore the rupees to their proper weight and standard. A Delhi rupee of the 18th year of Muhammad Sháh was sent as a sample for the new coinage. This rupee was 22 chauwals fine, but, being worn, had lost 2 chauwals in weight. The new rupees were, in consequence, 2 chauwals deficient, and from that time the Benares rupees continued at 9m. 6r. 6 ch., being 2 chauwals less than the original weight of 9m. 7r. In the 9th year the mint was farmed to Monsieur Gentille, the French Agent at Shujá'ud-daulah's court, and the same assay (22 chauwals) was continued until the 15th year (1774). A considerable portion of the rupees issued in the 16th year contained only $5\frac{1}{2}$ oz. of silver, to $10\frac{1}{2}$ oz. of copper.

In the 17th year of the reign of Sháh 'Álam (1776) the mint was transferred by the Company to Chait Singh, who engaged to coin rupees of 9m. 9r. 6 ch., weight and 18 chauwals fine, and to continue the die of the 17th san, in order to put an end to the confusion in the currency occasioned by the constant alteration of the value of the coin. "All rupees, therefore," the Records state, "coined in the Benares mint since the 17th year of the present reign, ought to be of the same weight and standard, and to pass current as sikkas* of the present year. The rupees current in the district of Benares may, therefore, be classed as sanwát and sikka, the former coined under the Mughal Princes, and the latter since the 17th year of the reign of Sháh 'Álam, when the mint was ceded to the Company by the Vizier, and by them transferred to Chait Singh."

The following table gives information as to the assays, weights, and names of the rupees coined at the Benares mint from its establishment to 1782:—

* Previous to the time of Farrukhsiyar all rupees coined under the reigning king were considered as sikkas, and passed at their original value during his life. At the accession of a new king, the rupees of the former reign were subject to a batta, and were not received into the royal treasury.

REIGN.	ASSAY.	BENARES WEIGHT.		CALCUTTA WEIGHT.		REMARKS.	
		M. R.	Ch.	M. R.	Ch.		
MUHAMMAD SHAH. 15th to 22nd years	22	9	7	10	...	The rupees of the 4th to 6th years of 'Alamgir II were called Triśūlis from having the triśul or Hindu trident stamped upon them.	
	32	...	...	...	...
		
	22	...	...	...	...
AHMAD SHAH. 1st year	...	...	...	...	...	The rupees of the 1st to 7th years were called Thumkā Goharshāhis; thumkā signifying small, and Gohar Shāh being the name of Shāh 'Alam previous to his accession to the throne. Called Chaurā or broad Goharshāhis* to distinguish them from the Thumkā or small ones, which Shujā'ud-daulah, at the desire of Lord Clive, ordered to be discontinued. Called Jhardār from a mark or branch marked on the coin. Sikka rupees of the same weight and fineness, and which ought to pass current at the same value. They are distinguished also by the appellation of machhlidār, from the head of a fish being stamped upon them.	
	24	...	...	...	...
	32	...	...	...	...
	26	...	...	...	...
'ĀLAMGĪR II. 1st and 2nd years	26	...	...	...	...
	28	...	...	...	...
	24	...	...	...	...
	32	...	...	...	...
3rd year	64	9	6	9	7	4	
4th "	40	9	7	9	10	...	
5th "	48	9	6	4	9	7	4
6th "	100	26	9	7	10	...	...
SHĀH 'ĀLAM. 1st year	26	9	7	...	...	...	...
	40	...	...	...	...	...	...
	22	9	6	9	7	6	...
	26	...	...	...	...	...	...
	28	...	...	...	...	...	...
	12th "	28	...	...	...	...	...
	13th to 14th years	28	...	...	...	...	...
15th " 16th "	28	...	...	...	...	...
17th " 28th "	18	...	...	...	...	...

* Regulation V. 1821, refers to " Ghurshāhee or Tirsoolee rupees."

* Regulation V, 1821, refers to "Gharshāhee or Tirsoolee rupees."

The fact is incidentally mentioned that, when the Sháhzádá (Sháh 'Álam) invaded Bihár, the mint accompanied him, and a large quantity of Benares rupees were melted down and coined into 'rikabees' (*rikáb*, a stirrup) which were 1r. 2ch. deficient in weight, and of 64 chauwals assay, but were made to pass in the camp as sikkas of the established weight and fineness. It is also noted that two lacs of rupees were annually melted down for the manufacture of the laces and rich stuffs for which Benares was celebrated.

From Mr. Barlow's sketch the following account of the coinage of copper has been derived.

The pice current in the city and district of Benares previous to the establishment of the mint, were mostly coined at Gorakhpur in Oudh from copper brought from the northern hills. The first coinage of pice at Benares was in the 23rd year of the reign of Muhammad Sháh (1742), when 100 maunds weight were struck with the die of the sikka rupee. From that period till the 4th year of the reign of Sháh 'Álam (1762), no pice were coined in the Benares mint. In the 5th year the farmer of the mint purchased some English copper, and coined it into pice of 10 máshás stamped with the die of Gorakhpur. The number exchanged for a rupee was 45 to 48. The coinage of pice was again discontinued until the 17th year (1776), when it was re-established by permission of Rájá Chait Singh. The new pice were 10m. 3r. in weight, and passed current at about 50 or 51 to the rupee. In the following year a quantity of copper was brought to Benares from Calcutta, and the coining of pice and exclusive privilege of buying and selling copper in Benares granted to one Káshmirú Mall for Rs. 5,000. The weight of the coins continued to be 10m. 3r. and they passed in the bazár at about 52 or 53 per rupee. In the 19th and 20th years the coinage was declared free, and those who brought copper received pice in return, after paying duties. In the 21st year (1779) a considerable revolution took place in the copper coinage. The Nawáb Vizier issued orders to the officers of the Alláhábád mint to reduce the weight of the pice to 9m. 2r. The merchants, finding that their maund of copper yielded 3,650 pice at Alláhábád and only 3,250 at Benares, carried all their copper to the former place. The coinage of pice was, consequently, at a stand still, only 29 maunds being coined during the year. Large quantities of the new Alláhábád pice were brought by merchants to Benares. Rájá Chait Singh at first refused to authorise their currency, but at length gave his consent, and the Alláhábád pice of 9m. 3r. were declared current, and ordered to be received in payment in common with the old pice of 10m. 3r. The result was that the bankers contrived to lower the value of the pice altogether, and were

assisted in so doing by large importations from Alláhábád. In the 22nd year Rájá Chait Singh ordered pice to be coined of the same size and weight as the Alláhábád pice, and this contributed greatly to overstocking the circulation. In the 23rd and 24th years, after the expulsion of Chait Singh, the same weight (9m. 2r.) was continued, and the price of pice continued to fall until the famine in the next year, when they sold at thirteen for a rupee. In the 27th year the Resident at Benares ordered that no pice should be issued from the mint under 10m. 3r. and that Gorakhpur pice, weighing 10m. to 10m. 3r. and Benares pice, weighing 10m. 3r. should pass at the same value. The price immediately rose to 58 per rupee. In the 28th year (1787), when it was supposed that sufficient new pice had been coined for the city of Benares, the Gorakhpur pice were forbidden, and only the new Benares pice stamped with a trisúl (trident), and weighing from 10m. to 10m. 3r. and the Gorakhpur pice, re-stamped and not under 10m. in weight, were declared current.

As regards the gold coinage at the Benares mint, it is stated that the gold was assayed there by touch on a species of the *salgrám** stone so celebrated in the *śástras* of the Hindus. Upon comparing the Calcutta with the Benares gold mohars, it was found (1787) that the former was about Rs. 2-1-6 better than the latter, *i. e.*, R. 1-14-9 in weight and As 2-9 in assay. It was suggested, therefore, that the Benares mohar should be raised to the same weight and standard as the Calcutta mohar.

1792. On June 26, 1792, the following regulations were submitted, among others, for the consideration of the Governor General:—

Dacca, Patna, Murshidábád.

I. That the rupees coined throughout Bengal, Bihár,† and the district of Benares, be of the same weight, standard, size and impression (the rupee of the 19th san then coined at Calcutta).

II. That the mints of Dacca, Patna and Murshidábád be re-established.

III. That one species of copper coin be declared current throughout the Company's dominions.

In August, 1792, it was notified that directions had already been given by the Governor General for the re-establishment of the mints at Dacca, Patna, and Murshidábád; and in the same month, the follow-

* *Sálagráma* stones are fossil ammonites, which, as worshipped by the Hindus, are commonly perforated by holes believed to have been made by Vishnu.

† I have, for convenience, adopted a uniform spelling of the names, of places, *e. g.*, Bihár and Murshidábád instead of Behar and Moorshedabad.

ing propositions were, among others, made by the Calcutta mint Committee, with a view to drawing the old and light coins into the mints, and establishing the general currency of the sikka rupee:—

I. That after April 10th, 1794, only the san 19 sikka rupees be received at the public treasuries, or issued therefrom;

II. That public notice be given that Government, with a view to enabling individuals to get their old coin or bullion converted into sikka rupees without delay, have established mints at Dacca, Patna and Murshidábád in addition to the mint at Calcutta;

III. That the rupees coined at Dacca, Patna and Murshidábád, be made precisely of the same shape, weight and standard as the 19 san sikka rupees coined at Calcutta, in order that the rupees struck at the several mints might not be recognisable from each other, and might be received and paid indiscriminately;

IV. That the dies be made of the same size as the coin, and that the coins be milled;

V. That the hijrah year be omitted, as the insertion of it, by showing the year in which the rupees were struck, would defeat the object of Government in continuing the 19th san upon the coins.

The earliest weekly account of the new Dacca mint which I have been able to find, is dated 11th August, 1792, on which day the Assay Master also submitted to the Calcutta Mint Committee the accounts of the preceding three months, and promised in future to forward a weekly account.

On 23rd October, 1792, the Assay Master of the Murshidábád mint reported that he was erecting workshops, etc., at the Dutch Factory, and hoped to begin coining by the end of the following week. The opening of the mint was announced to the Governor General in a letter dated December, 1792.

1793. On 24th February, 1793, the Assay Master of the Patna mint announced to the Calcutta Mint Committee that everything would be ready by the end of the month for the coining of five lacs monthly.

In 1793 a regulation* was passed, by which the gold and silver coin in Bengal, Bihár, and Orissa was reformed, and the currency of any gold or silver coin in these provinces, but the 19th san gold mohar and 19th san sikka rupee, and their respective divisions into halves and quarters, was prohibited.

* See Prinsep, *Indian Antiquities*, and Thurston, *History of the Coinage of the East India Company*.

1795. In a minute dated 2nd October, 1795, the defective state of the copper coinage in Bengal was dealt with, and the principles upon which the copper currency was regulated under Native administration, and the rules that had been prescribed regarding it by the British Government were noted. Bengal. "Under the Mogul administration," the minute states, "the silver coin was the only measure of value and legal tender of payments. Gold mohurs and pice were struck at the mints for the convenience of individuals, who carried gold or copper to be converted into those coins. But the Government never fixed the number of pice which should be equivalent to a rupee, any more than the number of rupees which should pass in exchange for a gold mohur. From the year 1772, when the mints at Dacca, Patna, and Murshidábád were withdrawn, no pice were coined in the Provinces until 1783, when a contract was concluded with Mr. Prinsep for coining pice on account of the Government. These pice were of four descriptions, viz., whole or pukka, weighing 20 annas, half pice, quarters and eighths. These pice were issued by the Government at the rate of 32 pukka pice, 64 half, 128 quarter pice, and 256 eighth pice for the sikka rupee."

At a council, over which Sir John Shore, Governor General, presided, held on 2nd October, 1795, it was considered expedient that there should only be two descriptions of copper coin, a whole and half pice, to pass at the value of a quarter and an eighth of an anna respectively. It was, accordingly, resolved that a Regulation should be framed, and published for the establishment of a new copper coinage* for Bengal Bihár, and Orissa. Among the provisions of this Regulation were:—

I. That people in all parts of the country be apprised of the value at which the coin was issued by Government, and to be received and paid by the public and individuals;

II. That the value be inscribed on one surface in Persian, Bangálí and Nágari—the characters used in business in the Provinces;

III. That the coin be declared legal tender of payment for fractions of half a rupee;

IV. That the coin be struck at the Calcutta mint, and not at the three City mints.

The Governor General approved of samples of the new pice and half pice in November, 1795, and orders were issued to coin an equal value of the two coins, until it was ascertained which was likely to be in the greatest demand. A week later, however, the Governor General, understanding that the relative values of the whole and half pice would

* The existing pice was known as the Calcutta, or Prinsep's pice.

be best understood by the Natives, especially the lower orders, by substituting “ek pái sikká” and “ádhá pái sikká” for “pauu áná and (the inscriptions originally ordered) resolved that instructions for altering the inscriptions be issued to the Mint Master.

Towards the end of 1795 trouble was caused by the debased quality of the gold mohars issued from the Dacca, Patna, and Murshidábád mints, and by the rupees issued from the Patna and Murshidábád mints being below sikka standard. It was, after enquiry into the matter, resolved that the coinage of gold at the Patna mint should be for the time discontinued, and that, for the present, no more coins should be struck at the Murshidábád mint. In the course of the correspondence relating to the debased coinage, reference is made to the distinguishing marks of the three mints, but, for precaution's sake, the nature of these private marks (recognisable with a lens) is not mentioned.

1796. In February, 1796, it was resolved that all the gold bullion sent to the Calcutta mint should, until further orders, be coined into quarter mohars, inasmuch as these coins were in much greater request among the lower orders than the gold coins of higher value.

In April 1796, in consequence of a report from the Mint Master, that considerable loss would be sustained annually if Government adhered to their original intention of coining the whole pice at 16 annas and the half pice at 8 annas sikka weight, Government was reduced to the alternative of relinquishing the establishment of the new copper coinage altogether, or reducing its value. It was accordingly resolved that the coining of whole pice of 12 annas and half pice of 6 annas sikka weight, be commenced immediately. The Mint Master, however, reported that dies could not be made for pice of smaller diameter than those then in use, as there would not be a sufficient body of metal to yield a bold impression. It was thereupon ordered that, in the event of its appearing impracticable to insert the whole of the inscription, the Persian portion should be omitted instead of the Nágari as suggested by the Mint.

1797. The coinage of money at the Dacca and Patna mints ceased on 31st January 1797, and December 31st 1796, respectively. The date of the closing of the Murshidábád mint I have not been able to find, but the records of 1799 make reference to “assaying materials which may be deposited in the late mint at that station, and to the best means of disposing of the building which was formerly used for a mint at Murshidábád.”

1800. In a letter dated 12th December, 1800, on the subject of the irregularities at the Benares mint, the **Benares.** Collector of that city suggested the advisability of a European being placed in charge of the mint, and of having rupees coined there of the same standard as the Bihâr sikka rupees.

1801. In April 1801, a Committee was appointed to enquire into the state of the Benares mint, and report on the **Benares.** expediency of continuing it. From the Committee's report it appears that, since the abolition of the Residency, the mint had been left without the superintendence of a European official, and that the same species of gold, silver, and copper coins continued to be struck as at the time when Mr. Barlow reported on the mint (p. 54). In recommending a continuation of the mint, the Committee stated that "a connexion has always subsisted between the mint and the manufacturers of gold and silver wire and thread, and the weavers of rich cloths, and embroideries made at Benares, on which the prosperity of the trade in these articles appears so much to depend that, in the event of the abolition of the mint, the manufacturers might require some similar establishment to supply its place." In reviewing the report of the Committee, the Governor-General did not think it advisable either to abolish the mint, or to alter the mode in which the coinage had been hitherto conducted, but ordered that the Agent of the Governor-General, the Magistrate of the city, and the Collector of the Province of Benares be constituted a permanent Committee for the superintendence and control of the mint.

1802. In 1802 letters were received from Madras and Bombay, from which it appeared very necessary that a **Bombay, Madras.** general reform of their coinage should be carried out, and greater uniformity introduced, so as to relieve the public and individuals from the inconvenience arising from so great a variety of coins, and from so frequent fluctuations in their values. The following plan of a new coinage was submitted by the Calcutta Mint:—

I. That the gold and silver coins of Madras, Bombay, and the Ceded Districts, be of the same standard and weight;

II. That the gold mohar (gold rupee) weigh 180 grains troy, and contain 168 grains of gold and 12 grains of alloy:

III. That the silver rupee weigh 186 grains troy, and contain 173 grains of silver and 13 grains of alloy;

IV. That fourteen rupees be equal to, and pass for the gold mohur.

V. That the mohar and rupee of Bombay be divided into halves, quarters, and eighths (which last could be milled and stamped without trouble);

VI. That the Madras quarter mohar pass for 42 silver fánams, and the Madras rupee for 12 fánams.

In this proposed coinage the quarter gold mohar was of the same intrinsic value as the Madras star pagoda, but the rupee was nearly 4 per cent. better than the Madras Arkát rupee. The proposed new rupee was more than 5 per cent better than the Bombay rupee, which had been adopted from the Surat Mint.

In a letter dated July, 1803, stating that the Governor-General had it in contemplation to establish a coinage of the same weight and standard throughout the provinces ceded to the Company by the Nawáb Vizier, it was announced that a Committee had been appointed for the superintendence of the mints established at Baraili and Alláhábád, which were to report to Government their suggestions for the improvement of the coinage in the ceded provinces. I have not been able to ascertain how long the coinage of the Alláhábád mint continued, but reference is made in December, 1805, to "base coin issued from the mint at Alláhábád a short time previously to the coinage at that place."

1803. In May, 1803, the Collector of Gorakhpur stated that "it is the opinion of some sensible shroffs that, in the course of the ensuing year, it may be advisable to establish a mint at the town of Gorakhpur. In this case it is my opinion that the Lucknow sikka rupee of the 28th san should be gradually introduced as the standard currency of Gorakhpur. On the other hand, the shroffs would greatly prefer the Gorakhpur rupee because of the advantages always derived from the fluctuation of batta on rupees of different standards."

By Regulation XLV, 1803, it was enacted that:—

(Sect. II.) A silver coin, to be denominated the Lucknow sikka rupee of the 45th san, struck in the mint of Farrukhábád, corresponding in weight and standard with the sikka rupee at present struck at Lucknow, in the dominions of the Nawáb Vizier, and thence denominated the Lucknow rupee, is hereby declared to be the established and legal silver coin in the provinces ceded by the Nawáb Vizier to the English East India Company.

(Sect. IV.) A mint shall be established at, or in the immediate vicinity of Farrukhábád, in which Lucknow rupees of the 45th san, and of the prescribed weight and standard, and half and quarter rupees of the same standard and proportionate weight, will be coined.

(Sect. V.) The Lucknow 45th san sikka rupee, as established by this regulation, shall be of the same size and form as the 10th san

sikka rupee struck in the mint at Calcutta, and shall bear the following impression:—

<i>Obverse.</i>	<i>Reverse.</i>
الله حامي دين محمد	ميهنت مانوس
ساره فضل شاه عالم بادشاه	سنه ۱۲ جلوس
سكه زد بر هفت کشور *	ضرب فرخ آباد

(Sect. VI.) The half and quarter rupee shall be proportionately less than the rupee, and bear the same impression as the rupee.

(Sect. XII.) The Mint Master at Calcutta shall cause a private mark to be put on all dies which may be prepared for the mint at Farrukhabád, but in such a manner as not to be distinguished by the naked eye, or by persons unacquainted with it.

1804. In 1804 the Commissioner of Cuttack pointed out that great inconvenience was experienced in the Province of Cuttack from the want of a current coin of small value, especially for the use of the troops, and pilgrims resorting to the temple of Jagannáth, and proposed that the coin should bear on one face the figure of Jagannáth, and on the other the value of the coin in Persian and Uriya, and the date. This coin was never struck.

In this year the Assay Master of the Benares mint expressed a wish that "a coining, milling, and laminating machine may be sent up to Benares to enable me to ascertain by experiments what advantage there might be in introducing the mode at present used in Calcutta, or in continuing the native method of coining with the hammer only, though the whole figure of the die is not impressed on the rupees that are made in any of the native mints. The Ríwá rupees, though of inferior value, have to an inexperienced person very much the aspect of Benares rupees, and are sometimes passed as such."

The Mint Committees in the Ceded Provinces (Barailí and Alláhábád) were called on, in 1804, to report their views as to the introduction of a new copper coinage. The Alláhábád Committee recommended that a new copper coinage should be issued, bearing the same impression as the Lucknow rupees struck at Alláhábád. "There are," the Committee stated, "two kinds of copper coinage in currency.

* The above is quoted from the text of the Regulation. Mr. Rodgers (J. A. S. B., Vol. LVII, Part I for 1888) gives a slightly different version. Ed.

The average exchange of the first is two to an anna, and of the second four to an anna. We recommend that, for the present, the new coinage be limited to the first sort."

In their report the Baraili Committee gave the following details

Baraili.

concerning the history of the copper coinage at that mint. "At Baraili no copper coinage was known until about sixteen years ago, when it was introduced by Mahdí 'Alí Khán, the ámil, who coined pice called shamsher sháhí from their having the figure of a sword stamped upon them. They were generally coined out of old pice or copper utensils. This coinage continued two years, after which the same ámil substituted another species of pice called machhlidárs from their having the figure of a fish stamped upon them. A few years after an improved coinage was introduced by the then ámil of Rohilkhand, whose pice were termed kaṭār from their being stamped with a dagger. After that, when Mahdí 'Alí Khán became ámil for the second time in 1205 (1790), though the name and appearance remained the same, the weight was reduced from 18 10 17 and even 16 máshás. In this diminished state the coinage of the kaṭār sháhís continued until the cession of the provinces to the Company in November, 1801. They are still current in the southern and eastern parts of Rohilkhand, but never obtained circulation equal to that of the najib khánís, which are current at Rámpur."

The opinion expressed by the Committee was that there were no special circumstances of a local nature which urgently demanded the introduction of a copper coinage, but that it appeared advisable, on general principles, to introduce a sort of pice which would be intrinsically valuable from its purity, and difficult of imitation, and which should bear the same proportion to the local silver currency which the pice in the Lower Provinces bore to the Calcutta sikka rupees.

It appears from a report by Mr. Seton that the system of farming the Baraili mint was abolished in 1802. No alteration was introduced into the standard of the rupee, except that, to mark the period at which the change of system took place, the Persian letter چ (the first letter of the late Súbah Hussain 'Alí Khán) was discontinued, and و (W) substituted in compliment to the Lieutenant-Governor.

1805. In February 1805, the authorities of the Farrukhabád mint

Farrukhabád.

recommended the coinage of milled in place of hammered money as a measure tending to correct several existing abuses and imperfections. In July a letter from Government stated that "The Governor General in Council has determined on the immediate introduction of a new silver coin into

the provinces ceded by the Nawáb Vizier to the English East India Company, and into the conquered Provinces of the Nawáb and on the right bank of the river Jumna, including the Zillah of Bundelkhand, to be denominated the Lucknow sikka rupee of the 45th san, struck at Farrukhábad, corresponding in weight and standard with the sikka rupee at present struck at Lucknow in the dominions of the Nawáb Vizier; and has it in contemplation to establish a new copper coin in the provinces above-mentioned, of an uniform weight, to consist of pure copper."

1806. In 1806 the Mint Master at Benares, in a report on the copper currency of the Benares Province, stated that "there is no regulation for the weight, size, or impression of pice that can be the least check on any person making them privately without fear of detection. A great part of the pice now in circulation have been made in Oudh, the Ríwá Rájá's country, and other places, and smuggled into circulation." He, accordingly, suggested for the consideration of Government a new copper coinage (of which specimens were forwarded) to consist of:—

VALUE.	Number to the rupee.	Weight: Grains troy.	Diameter, Inches.
Double Pice. ...	32	240	$1\frac{1}{4}$
Single „ ...	64	120	1
Half „ ...	128	60	$\frac{3}{4}$
Quarter „ ...	256	30	$\frac{5}{16}$

"If," the Mint Master wrote, "the machinery of the Calcutta mint could be used in laminating the derabs, it would greatly reduce the expense of making the pice, but I would by no means advise the impression being stamped in Calcutta, as the prejudices of the Natives in Benares should be conceded to."

In a letter dated 10th December, 1806, the Governor General, in forwarding a letter from the Court of Directors concerning a plan for one general coinage for the Company's possession, expressed his opinion that the coins should be struck in the name of the king of Delhi, and not of the Company with their arms, as proposed by the Court. In the letter referred to, of which the following is a *précis*, the Court of Directors wrote as

follows:—"We think the Earl of Liverpool* has established the principle that "the money or coin which is to be the principal measure of property, ought to be of one metal only." In applying the argument to a coin for general use in India, there cannot be any doubt, in our opinion, that such coinage must be of silver. The standard weight of the silver coins issued from the mints of our several Presidencies we find to be as follows:—

Calcutta sikka rupee.	Troy grs.	...	179 $\frac{3}{4}$.
Madras Arcot	" " "	...	176 $\frac{3}{4}$.
Bombay	" " "	...	179.

"We think it would answer a good purpose to fix the gross weight in whole numbers, and should prefer the weight of 180 grs. troy. The British standard for gold coin is $\frac{1}{12}$ alloy and $1\frac{1}{2}$ fine. There is no doubt that $\frac{1}{12}$ alloy of copper would be equally proper for silver coin, and we are of opinion that this proportion should be adopted, in which case the new rupees would have 165 grains of fine silver and 15 grains of alloy. Should the new rupee be ultimately adopted, there may be coined also:—

Half rupee weighing troy grs.	...	90.
Quarter " " " "	...	45.
Anna " " " "	...	11 $\frac{1}{4}$.

"A copper coinage should also be determined on for general circulation, and it is our opinion that it should consist of 6 pice or half anna, 3 pice or quarter anna, and 1 pice pieces.

"We are desirous of establishing a gold coin on a principle fitted for general use. This coin should, in our opinion, be called a gold rupee, and be made of the same standard as the silver rupee, *viz.*, 180 grains gross weight and 165 grains fine, and be divided into halves and quarters. The quarter gold rupee appears well fitted to supply the place of the Madras star pagoda in the payment of the Madras army.

"We have thought the adoption of a new coinage for British India a fit opportunity for giving a new impression to our currency, and the most appropriate, in our esteem, is the Company's arms with an inscription "English East India Company," as also the denomination and value of the coin with the year of coinage, and for the reverse a Persian inscription expressing the English one on the obverse with the date of coinage and value and denomination of the coin. If the smaller gold and silver coins (perhaps all below the half rupee) do not present surface sufficient for a clear impression, it would be proper to substitute for the Company's arms the Company's crest, the inscriptions to remain alike in all."

* Letter to the King on the coins of the realm.

1807. A letter from the Mint Master at Farrukhábád dated 24th October, 1807, asks for new milling dies for **Farrukhábád.** rupees, and states that the mint had not yet been furnished with dies for the half and quarter rupees, the expediency of introducing which had been suggested by the Mint Committee.

In this year, and early in 1808, proclamations were issued by **Madras.** the Government of Madras respecting a new coinage for the Madras Presidency, of which the following is a *résumé*.

A SILVER COINAGE.

"All the silver coins of the Presidency coined at the Madras mint shall be coined direct from dollars when imported, and be of dollar fineness.

"The double rupee will contain double the quantity, the half rupee half the quantity, and the quarter rupee a quarter of the pure silver which the rupee contains.

"There are also coined and issued the following small coins:—
Five fanams, on which is inscribed their denomination in English,
Persian, Gentoo (Telugu), and Malabar (Malayálam).

Three*	"	"	"	"	"
Two	"	"	"	"	"
Single	"	"	"	"	"

B. COPPER COINAGE.

"The Governor General in Council has been pleased to issue a new coinage of the following numbers, values, etc.

Double Dubs.	...	24	to the rupee.
Single "	...	48	" " "
Half "	...	96	" " "
Quarter "	...	192	" " "

"In case the above coins are issued at the Presidency, etc., they are to measure with the star pagodas:—

84 double dubs	to one pagoda.
168 single	" " " "
336 half	" " " "
672 quarter	" " " "

"There are also issued the following coins with their denomination inscribed on them in English, Persian, Gentoo, and Malabar:—40 cash, 20 cash, 10 cash, 5 cash."

* The five fánam pieces are now very scarce. Double and single fánams are fairly common. The three fánam pieces I have never seen, and have met with no other reference to them. I am inclined to think that the mention of them is a mistake.

In this Proclamation, which is dated 22nd August, 1807, it is stated that "the Governor in Council has also deemed it expedient to issue a silver coinage of half and quarter pagodas of dollar fineness."

This Proclamation was repeated on 28th November, 1807, with the addition of a 2½ cash piece as being 'also issued.'

C. GOLD COINAGE.

"The Governor in Council, having deemed it necessary to establish a new gold currency, has resolved to coin a gold pagoda of 22 carats fine, and a double pagoda of the same fineness, with English, Persian, Gontoo, and Malabar inscriptions."

In August, 1807, the mint master at Benares received a letter from Calcutta respecting a new copper coinage for the province of Benares, which was to be prepared in the Calcutta mint. This coinage should, it was thought, consist of:—

			Number to a	Calcutta sikka
			rupce.	weight.
Double pice	...	...	32	1-1-6
Single „	...	...	64	0-8-9
Half			128	0-4-4½

1809. By Regulation X, 1809, the Calcutta mint was directed to coin pice for the province of Benares, valued at 64 per rupce.

Benares.

1810. In a letter dated 11th September, 1810, reference is made to "London made copper coins at Fort St.

Madras.

George, of which there is stated to be 80,000 pagodas in store, and which cannot be brought into circulation at that Presidency. We are of opinion that the 20 cash pieces might be circulated here at the value of one and a half of the Bengal pice, and that, in the present scarcity of copper, it would be advisable to send the whole of them to Bengal.

1811. A letter dated 16th September, 1811, states that "Government having been pleased to determine that

Benares.

no change shall be made in the local currency of the province of Benares, but that it shall be recognised as the legal currency of that portion of the Company's territories, we entirely concur as to the expediency of placing the mint of that province under the immediate control of the Supreme Government, and of assimilating it in every respect to the mints of Calcutta and Farrukhabád, by which means the coin which may hereafter be struck in the Benares mint will be much improved in point of fabrication and appearance.

The same letter states that "the quantity of gold which has been coined in the Benares mint since 1782 only amounted to 121,949 mohars or about 1,768,260 rupees, whilst, during the same period, the silver coinage has amounted to rupees 51,631,000, and it is accordingly proposed by the Board of Commissioners that the Benares mint shall not be open for the coinage of gold bullion in future."

A Regulation for the future management of the Benares mint, (the date* of which is not given in the records),
Benares. has, among its clauses, the following:—

Preamble. Whereas it has been deemed advisable to continue the mint at Benares, and to assimilate the internal management of it to the rules already in force in the Mints of Calcutta and Farrukhábád, the following rules have been enacted to be in force from their promulgation:—

I. The silver coin now current in the Benares province under the denomination of the machhlídár rupee, commonly called the Benares rupee, shall continue to be the established coin of the province, and shall be received as such in all public and private transactions.

II. The Benares rupee is to continue of the following weight, and half and quarter rupees are to be coined of the same standard and proportionate weight:—

Troy grains	...	...	...	175
Pure silver	...	...	...	168·875
Alloy ...	...	...	...	6·125

III. The Benares rupee shall hereafter be struck of the same size and form as the 19th san rupee struck in the mint of Calcutta, and shall bear the same impression as is now in use;

IV. The half and quarter rupee shall be proportionately less than the rupee, and shall have the same impression as the rupee;

V. The edges shall be milled, and the dies (to be cut in the Calcutta mint) shall be made of the same size as the coin, so that the whole impression may appear;

VI. The mint master at Calcutta shall cause a private mark to be put upon all the dies which may be prepared for the Benares mint.

1812. In 1812 the Lieutenant-Governor of Java asked that a supply of copper coinage might be sent from
Java. Bengal to Batavia, as the want of a small currency was felt throughout the colony. The coinage, it was suggested, should consist of 165 coins to one Dutch pound weight, and the device be either the figure of a buffalo or elephant, and on the reverse, Java and the date.

* It was probably 1810, as it refers to "From and after the first day of 1811."

In April, 1812, the Madras mint Committee recommended that, in conformity with the orders of the Court of directors, the coinage of half and quarter pagodas and of pie, two, and single fānams be discontinued, and that the coinage of rupees, half, quarter, and eighth rupees be commenced; and that the half and quarter pagodas and five fānam pieces be re-coined into rupees as fast as possible, leaving the double and single fānams to remain in circulation until the fractions of the rupee were fully established.

1813. In 1813 it was pointed out that, since the “tirsoolec pisa” was originally established as the copper currency of Benares, no measures had been adopted to renew it; and the inscription had, by process of time, become more or less indistinct, and the shroffs had reduced the value of pie in which the trisul was defective by reducing it 11 per cent. in current value for no other reason than the defectiveness of the trisul.”

By a Resolution dated 7th August, 1813, the Governor-General, anticipating great convenience and advantage from the establishment of an uniform coinage throughout the ceded and conquered provinces, including the districts dependent on Delhi, resolved that the coinage to be carried on henceforth at the Delhi mint be confined to new Farrukhābād rupees of the weight and standard of the coin issued from the Farrukhābād mint, and bearing the same inscription. The Governor-General also expressed his opinion that there could be no objection to coining at the Delhi mint a limited number of rupees bearing the name and title of his present Majesty, Akbar Shāh, these rupees being only intended to be presented to His Majesty on the anniversary of his accession for the purpose of being distributed as complimentary presents.

In 1813 a Regulation for establishing a copper coinage in the Province of Benares was passed, among the clauses of which were the following:—

I. A copper coin weighing 100 grains troy, and consisting of pure copper, shall be established in the province of Benares (the coin to be fabricated at the Benares mint);

II. The form, size, and impression of the copper coin shall correspond with those prescribed by Sect. XII, Reg. II, 1803, for the Benares rupee, but the edges shall not be milled or have any mark or impression.

In November, 1813, the Court of Directors expressed their opinion that the coinage for the Bombay Presidency should be executed in the Calcutta mint, and

forwarded a number of coins as showing their views with respect to manner in which the coinage should be executed.

1816. In September, 1816, the Board of Commissioners, Farrukhábád, pointed out that for some time only a small quantity of silver had been brought to the mint by individuals for coinage, and suggested the expediency of employing the establishment in the coinage of copper pice on account of Government. The following draft Resolution was submitted by the Commissioners :—

I. That Sect. XLIII, Reg. XLV, 1803, proscribing a specified weight for the copper pice to be struck at Farrukhábád be rescinded

II. That such copper coin be struck at Farrukhábád, weighing 200 grains troy for the whole, or double pice, and 100 grains troy for the half or single pice;

III. That such copper coin shall be issued from the mint at the rate of 32 whole and 64 half pice for each rupee.

In November, 1816, the Mauritius Government wrote to the Governor General that “ this Colony is subject to considerable inconvenience and difficulties, especially since the great fire, from the want of a small money for the ordinary daily transactions of common life. It would, therefore, be most desirable to obtain from the mint of the Supreme Government a coinage for the use of this land. A decimal division of the Spanish Dollar, which coin is here equivalent to two sikka rupees, would be the most convenient money for accounts. The books of the merchants and traders being kept in livres, ten of which are in this Colony equal to the Spanish Dollar, it would be desirable that each of the silver coins should be marked ONE LIVRE.”

By Regulation XXV, 1817, it was enacted that —

Bengal.

I. The copper pice struck at the Calcutta mint shall be of pure copper, and of the weight of 100 grains troy;

II. The inscription shall be on one side “ one pie sikka ” in Bangálí, Persian, and Nágarí, and the date on the obverse.

III. That the pice shall be issued from the mint and public treasuries at the rate of 64 to 1 sikka rupee....., and be legal tender at the rate of 64 to a rupee of the local currency throughout the provinces subject to the Presidency of Fort William.

IV. The pice struck at the mints of Benares and Farrukhábád, agreeably to the provisions of Regulation X, 1809, Reg. VII, 1814, and Reg. XXI, 1816, shall be also considered as circulating equally

Benares.

Farrukhábád.

with the pice of Calcutta coinage throughout the above-mentioned provinces, and shall in like manner, be received as legal tender in payment of the fractional parts of a rupee of the local currency at the rate of 64 pice for each rupee.

By Regulation XXVI, 1817, it was enacted that:—

Farrukhábád.

I. Whereas it may from time to time be found expedient to coin rupees of the weight and standard of the Farrukhábád rupee at the mints of Calcutta or Benares, it has seemed advisable to rescind so much of section II of Reg. XLV, 1803, as tends to limit the coinage of Farrukhábád rupees to the mint of Farrukhábád, and to direct that the following enactment be henceforth in force:—

II. The silver coin denominated the Farrukhábád rupee, and of the weight and standard prescribed by section II of Reg. III, 1806, struck at the mints of Calcutta, Farrukhábád, or Benares, or at any other mint established by order of the Governor General in Council, is hereby declared to be the established and legal silver coin in the ceded and conquered provinces.

In 1817 the weight of the pice struck in the Calcutta mint was fixed at 100 grains, and they bore the inscription “one pie sikka.”

Calcutta.

1818. In June, 1818, the Vice-President in Council expressed his concurrence with the Resident at Delhi as to the inexpediency of maintaining the Delhi

Delhi.

mint, and the Resident was accordingly directed to discontinue its operations, still causing, however, such a number of coins to be struck as might be necessary for the purpose of satisfying the feelings of the king.

In August, 1818, the Calcutta Mint Master submitted for the consideration of Government specimen coins of the

General.

weight and standard of the proposed new currency, and stated that, as the difference in size and weight of the new coins might not be considered sufficient to enable all persons to at once distinguish them from the old ones, he had thought it expedient to affix such further distinctive marks as would be obvious to the most ordinary observer. The specimens, which were distinguished from the existing currency by a raised rim and perpendicular milling, were adopted as the pattern for the new coinage.

In 1818 the Calcutta Mint Committee stated that they were not aware of any objection to the inscription on the rupee undergoing an alteration, and that it would be more consistent with the dignity of the British Government of India to authorise its own currencies by its own

peculiar stamp and impression; and suggested that, if any alteration was made, no date should be inserted, as an arbitrary batta on coins of various issues would thus be obviated without having recourse to any fictitious inscription.

1819. By Regulation XI, 1819, it was enacted that :—

Benares, Farrukhábád.

1. The coinage of the Benares rupee shall be discontinued ;

II. The Farrukhábád rupee shall be considered the legal currency of the province of Benares ;

III. The Farrukhábád rupee shall be a legal tender in all the territories under the Bengal Government, with the exception of Bengal, Bihár, and Orissa, whether struck at the mints of Calcutta, Benares, or Farrukhábád, or any other mint that may be hereafter established within the aforesaid limits under the authority of the British Government ;

IV. The Farrukhábád rupee to be struck at any of the mints before mentioned, shall be of the value of the present Farrukhábád rupee, and of the standard of the present Calcutta rupee, viz. :

Weight	Troy grs.	...	...	180.234
Pure silver	"	...	...	165.215
Alloy	"	...	...	15.019

In addition to the substitution of the new Farrukhábád rupee, the Mint Committee recommended the temporary establishment of mints at Ajmere and Ságár, to convert the existing currencies into the new coin. The Ságár mint was at that time issuing rupees called "Saugor or Balashahie." The Government expressed their opinion that the recommendation of the Committee was judicious. I can find no further reference to the Ajmere mint in the records.

1821. The Bombay coinage consisted in 1821 of the following :—

				Troy grs.
Gold.	Mohar	...	...	180
	Panchia (5 rupees)	...	...	60
	Rupee	...	...	12
Silver.	Rupee	...	...	180
	Half Rupee	...	...	90
	Quarter "	...	...	45
	Eighth "	...	...	22.5
Copper.	Anna	...	...	400
	Half Anna	...	...	200
	Quarter "	...	...	100
	Pice	...	...	33.33

In this year the Mauritius Government, being put to inconvenience by the use of paper money for the small change of the colony, asked that the Calcutta mint might coin for them small tokens to the value of 100,000 sikka rupees. The wish of the Mauritius Government was acceded to.

1824. In 1824 an application was made by the Resident at Singapore for a supply of small coins to be struck at the Calcutta mint for the use of that settlement. In the Resident's letter it is stated that the small money in circulation throughout the Malay countries consisted of copper Dutch duyts and pice of Prince of Wales' island, the brass coin of China, and of silver Dutch 2, 6, and 9 silver (stiver?; pieces, and the guilder or florin commonly called by the natives the rupee. The most universally used coins were the duyts and two stiver pice. The duyts was the real money of the most remote and unfrequented parts of Sumatra and Borneo, and the two stiver pice was the true circulating medium of the Celebes, the Spanish dollar being only used in foreign commercial transactions. It was suggested that the duyts and two silver pice should be struck with the same inscriptions, *viz.* the value in the English, Chinese, Malay and Bugies languages, and on the reverse the crest of the East India Company without the supporters, and with the date and motto of the Company beneath.

By Regulation II, 1824, it was decided that the Farrukhabád rupees, to be coined at the Ságár mint of 180 grains, 165 fine and 15 alloy, should be the legal currency of Ságár and territories on the Narmadá (Nerbudda).

A letter from the Bombay Mint Committee, dated 27th September, 1824, refers to a communication received from the Supreme Government, desiring that immediate steps be taken for the coinage of a new rupee of the Madras standard, and asking for their opinion on the measures to be adopted for a general reform of the currency. The Committee suggested, with reference to the first point, that a proclamation should be issued, announcing the alteration of the standard, and declaring the new rupee current at par with the old. They also recommended the division of the anna into sixteen instead of twelve pice, so that the copper currency would consist of:—

			Troy grs.
Anna	...	...	400
Half Anna	...	...	200
Quarter "	...	...	200
Double Pice	...	...	50
Single "	...	...	25

A draft proclamation was submitted by the Committee, announcing the alteration of the mint standard, the sanction of which by the Supreme Government is not recorded in the Records.

1825. In 1825 various suggestions for a change of impression on the currency were made, and the following extract is from an able report by Lieutenant

General.

Forbes, who was superintending the construction of the new Calcutta mint, and who, before proceeding to England in 1820, had been instructed by the Bengal Government to bring the subject of the device for the coin to the notice of the Court of Directors.

"It is observed," Lieutenant Forbes wrote, "that the impression chosen by the king of Oudh for his new currency shows that in reality no prejudice exists against the representation of animals on coins. The common practice of putting Coats-of-Arms on coins having led to the adoption of those of the Hon. Company as a device for some of their copper coins executed in England, the propriety of employing them on the money to be struck for the general circulation of India came first to be considered. From the minuteness of the scale to which they must be reduced on a coin, it was found that the Royal Arms situated in the upper left quarter of the Company's shield became undecipherable, and that, as its plain was otherwise blank, the total effect of the piece was feeble and unmeaning. With the intention of enriching the design, two large lions (the supporters), and a little one (the crest), were introduced. The portion of surface occupied by such a number of animals in the rampant and strange attitudes adopted in heraldry, now left so little space for the shield that the Royal Arms, diminished to a peg, became utterly undistinguishable. The unanimous opinion of artists that such a device would appear inelegant and barbarous was strikingly confirmed by the specimens produced on the money executed at Soho for transmission to Penang and the islands to the eastward. Although some of the dies were engraved by artists of considerable talent, no effort of skill or ingenuity could prevent the little odd lion of the crest from being mistaken for a monkey, nor obviate the misapprehension of common observers in conceiving the figures used as supporters to be ill-designed cats. A praiseworthy attempt to correct such serious defects by the introduction of lions modelled from life brought the question of the Arms to its final issue. It then appeared that the animals with which heraldry is conversant under the denomination of lions are not "real lions," and that correct similitudes of the animal himself, placed in the splay-footed position, required as supporters, had a ludicrous effect.

"I was induced to propose the simple emblem of the Company, a

a solitary lion, as a devise for the Indian coins. As an appropriate type of sovereignty, and as an emblem known and respected wherever British rule has been extended, I suggested that the ease, dignity, and strength which he so nobly personified on some of the coins of ancient Greece would be still more consistent and characteristic when applied to India. Moreover, I suggested that he might be completely localised by the ever-flourishing Palm, an Asiatic though ancient tasteful emblem of perpetuity.

"I have to solicit the attention of the Committee to a model of this devise executed after a drawing by Flaxman."

It was agreed that this device was well adapted for one face of the new coin, and suggested that either the head of the King (George IV), or the designation of the coin within a wreath, should be placed on the other face.

1826. In 1826 the Collector of Delhi expressed his opinion that a proposal to establish a mint for copper coinage at Delhi would be productive of good to the people, and a check to the impositions practised by the shroffs, whose source of livelihood consisted in the exaction of discount on the various current copper coins.

Delhi.

Calcutta.

1823-27. A volume of the records, 1823-27, is devoted to details connected with the construction of the new Calcutta mint.

In a report on the regulations for the conduct of the coinage subsequently to its transfer to the new Calcutta mint it is recorded that:—

I. It was the intention of the Hon. Court that the scale of the new mint machinery and establishment should be such as would permanently enable it to supply two-thirds of the coin required for the circulation of India;

II It was their design that the remaining third should be supplied by similar apparatus of half the power to be sent to Bombay;

III. The new Calcutta mint would immediately or eventually have to perform the work of the Calcutta mint, and of the mints of Benares, Farrukhabád, and Ságur;

IV. The Hon. Court held in view that the Calcutta and Bombay mints would, at any period found convenient, afford the means of equalising the coins, and of rendering uniform the coinages of India.

1827. In a letter dated 28th August, 1827, the Mint Master of the "new mint," Bombay, expressed his opinion that the Bombay division into rupees, quarters, and reas was preferable to the rupees, annas, and pie of the other side of India, and that the division of the gold mohur into fifteen parts was decidedly superior to the Calcutta division into sixteen.

Bombay.

1829. In 1829 it was suggested that the new Calcutta mint might be usefully employed in coining spelter money, which would be very useful to the poorer classes as a substitute for cowries, and which might be called the quarter or pao pice.

Delhi. The question of the re-establishment of the Delhi mint for the coinage of pice only was re-opened.

1830. In a letter dated 2nd February, 1830, the Calcutta Mint Committee was informed that the Governor General authorised the discontinuance of the establishment of the Benares mint, and the disposal of the machinery, apparatus, and other property of that mint.

In May, 1830, a letter was submitted by the Calcutta Mint Committee on the subject of the impression of the new coinage, and reiterating their opinion that the British Indian currencies should bear impressions characterising the authority by which they were issued either in the form of a head, emblem, or coat-of-arms. The Committee, in the same letter, expressed their opinion that, until this question was settled by the Court of Directors, the Bombay coinage should continue to bear the same impression as it did at present. In a further letter, submitting specimens of two Franc pieces, the Committee stated that the French milling machinery, and recommending that a plain milling should be adopted.

In August, 1830, the Calcutta Mint Committee submitted specimens of copper pice with a request that Government would sanction their coinage, as they seemed to be preferable to those in circulation at that time.

In December of the same year the Calcutta Mint Master suggested that a copper coinage might with advantage be carried out at the new mint for the Madras Presidency and the settlements to the eastward (Singapore, etc.) in which latter the demand for copper coin was at that time very urgent.

Ságar. 1831. A letter dated 11th January, 1831, stated that it had been resolved to abolish the mint at Ságar.

By an order dated 25th February, 1831, it was notified that "an alteration in the Calcutta sikka and Farrukhabád rupees was authorised by the Governor General in Council under date 13th July last, and that these currencies will in future be struck at the Calcutta mint with a plain flat milling only."

In August, 1831, the Calcutta Mint Committee submitted the following draft of a Regulation for legalising the circulation of the sub-divisions in the copper currency authorised to be coined by Government:—

Bengal.

I. That, besides the copper pice now current, which shall remain unchanged, there shall be coined a copper half-anna piece, and a copper pie or twelfth of an anna;

II. The copper half anna pie shall weigh twice the weight of the present pice, or 200 grains troy, and shall bear on one face the legend "Half anna" in Persian, and Nagári, and on the other the same in English and Bangálí. The exchangeable value of the coin shall be two for one anna, or one for two pice;

III. The twelfth of an anna piece on one pie shall weigh troy grains 33 333, and shall bear on one face the legend "One pái" in Persian and Nágari, and the same on the other in English and Bangálí. The exchangeable value of the coin shall be twelve for one anna on three for one pice.

IV. These coins shall be current at the above rates in all the provinces under the Bengal Presidency.

1833. In a letter from the Assay Master of the Calcutta mint (Mr. Prinsep) in April, 1833, some general information is given with reference to rupee

Rupee coinage.

coinage. "It has ever," he says, "been the expressed desire of the Hon. Court of Directors to equalise the coin of the whole of the Indian possessions both in weight and standard. In this they have but followed the landable practice of the Muhammadan Governments of India, which, while they arrogated to themselves the prerogative of coining, appear to have maintained with care and good faith the weight and purity of the circulating medium until the Empire was distracted with internal commotions, and the Viceroy of the Crown and tributary states assumed to themselves the control of the various mints, reserving a mere nominal subjection to the sovereign in the legend impressed upon their coin.

"The silver rupee was introduced, according to Abál-fazl, by Sher Sháh, who usurped the throne of Delhi from Humáyún in 1542. It had a weight of $11\frac{1}{4}$ máshás, which, at the rate of $15\frac{1}{2}$ grains per máshá, is equal to 174.4 grains of pure silver. This standard was adopted by Akbar, and accordingly we find coins of his reign weighing from 170 to 174 grains.

"The Murshidábád rupee was adopted for the coinage of the Company's súbah of Bengal, and has accordingly remained unchanged as the present sikka rupee.

"The Súrát rupee was also adopted as the currency of the Bombay Presidency under the treaty with the Nawáb of Súrát, who retained the privilege of coining; but in 1800 its pure contents were found to have sunk to 164·79 grains, when, to prevent further depreciation, the Government assumed charge of the mint, and the rupee was then fixed at the later valuation of 164·7 grains pure.

"The Delhi rupee struck at the Fathgarh mint by the Vizier of Oudh, in like manner, gradually diminished to 165·2 grains pure, when, by cession of the Duáb to the English, it was there arrested, and by a Regulation of 1806, was assumed as the standard currency of the Western Provinces. It was afterwards introduced into the Benares Provinces, where, (that mint having come earlier into our possession), the depreciation of the rupee has not reached the same extent: pure contents 169·2.

"The Arcot rupee in 1788, according to the assay tables, still retained 170 grains of pure silver. When adopted, however, as the standard rupee of the Madras Presidency, it had fallen to 165 grains, and there of course it has since remained.

"The alteration of the standard to $\frac{1}{12}$ of alloy in 1818 did not affect the proportion of pure metal, but the facility of equalising the three coins (Bombay, Madras, Farrukhábád) had been observed both in England and India; and, when the Sagar mint was established in 1825, it was ordered to coin new Farrukhábád rupees of 180 grains weight, the same as the standard of Madras, or containing 165 grains pure. The Bombay mint was ordered to assimilate its coin to the same in 1829. The Benares rupee alone continued to coin Farrukhábáds of 180·234 grains until its abolition in 1829; and the Calcutta mint has since coined them of the same weight, although a good opportunity was afforded by the promulgation of the new system in Bombay to have effected a simultaneous reform here."

In the letter under notice Mr. Prinsep recommended (and Government saw the expediency of adopting the recommendation)¹ that:—

I. The weight of the Farrukhábád rupee struck at the Calcutta mint be 180 grains troy instead of 180·234 grains; and that the weight of the Calcutta sikka rupee be 192 grains instead of 191·916, corresponding alterations being made in the half and quarter rupee.

II. The sikka weight (contra-distinguished to the sikka rupee) be equalised with the weight of the Farrukhábád rupee.

In October, 1833, Mr. Prinsep recommended that the armorial bearings impressed on both the Bombay and Madras copper coins, should be immediately

Calcutta.

¹ Reg. VII, 1893. See Thurston, *op. cit.*

adopted at Calcutta and that on the reverse should be the value in English, Nágari, and Persian, enclosed in a wreath. "The determination of this point," Mr. Prinsep said, "is the more urgent as it is now in contemplation to issue a large copper coin to replace the tirsóolee pice."

1834. In April, 1834, the following recommendations were submitted for the consideration of Government :—

General.

I. That there should be a common device for the coins of the three Presidencies ;

II. That this should differ on the three metals, so as to fully distinguish them from one another, and prevent fraud and imposition by gilding or silvering ;

III. That the device should be pictorial and essentially English, as, among other reasons, the adoption of such a device would entitle the Government to claim from the Colonial Governments of the Crown a recognition of the coin of India as a national money entitled to circulate at its intrinsic value in all the possessions of the Crown. The rupee in its present form is not so considered beyond the limits of the Company's authority.

IV. That the gold mohar of Bengal should in future be equalised with that of Bombay and Madras ;

V. That the coinage of the sikka rupee should be discontinued from the commencement of the new Charter, so as to prevent all confusion from the two coins being permitted to circulate together.

A specimen coin, executed by a native named Kásínáth, was submitted with the letter. The obverse bore a facsimile of the king's head on the English Sovereign, and the legend GULIELMUS, IIII. D. G. BRITANNIARUM, REX. F. D., and the reverse a laurel wreath with ONE RUPEE, 1834. in the centre, and the same in Persian, Bangáli, and Nágari on the margin. This device, with the substitution of MOHAR, was recommended for the gold coinage. Mr. Prinsep had already suggested that the copper coins should bear on the obverse the Company's Arms, and on the reverse a wreath with the designation of the coins in lieu of the word "adil" of Bombay or "ek falús panch kás ast" of Madras. The recommendations of the Committee were referred to the Court of Directors.

Various designs for the new coinage by Mr. Prinsep were also submitted, viz :—

- I. Britannia from the English penny ;
- II. A lion from an ancient Greek coin ;
- III. An elephant (from the Ceylon coin) ;
- IV. A ship ;

V. A British senator, between a Hindu and Mahomedan, presenting the charter ;

VI. An emblematical figure of Justice and Plenty ;

VII. Typical figures of Britannia and India ;

VIII. The Pīpal tree (*Ficus Indica*) from the seal of the Royal Asiatic Society of London.

1835. Early in 1835 engravings were prepared of the head of the king with the simple legend WILLIAM, IIII.

General.

KING, instead of the titles in Latin, and an impression in pure gold of the King's head with the lion as the reverse (proposed as a double mohur) was submitted.

In April, 1835, the Calcutta Mint Committee was informed that the rupee having on one side the inscription EAST INDIA COMPANY, with the nominal value of the coin in English, Persian, and Nāgarī, and the representation of a lotus flower and myrtle wreath had been approved by the Governor General as the model for the future coinage of the rupee. The Committee were requested to communicate with the Madras, Bombay, and Sāgar mints with the view of effecting a change in the rupee currency throughout British India with all convenient expedition. In a subsequent letter, however, it was resolved that on the obverse of the new silver coinage the title of the king should be simply WILLIAM, IIII. KING, and that on the reverse should be engraved the denomination of value in English and Persian only.

In June, 1835, it was resolved by the Governor General to abolish the Madras mint in conformity to the orders of the Court of Directors, and the Madras Government was desired to forward to Calcutta or Bombay such parts of the mint machinery as, if publicly sold, might be employed in fabricating coins.

Madras.

In September of the same year, it was resolved that the Sāgar mint should be abolished, as it was no longer considered necessary for supplying coin of the new legal currency with reference to the capability of the Calcutta and Bombay mints for the whole coinage of India.

Sāgar.

In October the Calcutta Mint Committee submitted specimens of a device which they thought suitable for the copper coinage of Bengal, i. e., on the obverse the Company's Arms as on the pice of Bombay and Madras, and on the reverse the denomination of the coin in English and Persian enclosed in a wreath, and the title of the Hon'ble Company on the margin in correspondence with the device of the new rupee. This device was adopted.

Bengal.

A letter from the Government, dated 25th November 1835, states that "under the circumstances represented,

General.

from which it appears that it would lead to considerable further delay to prepare and execute a new device for the gold coin proposed to be issued (with the name of the coin in English within a wreath instead of the lion,) whereas the coinage of double mohurs can be immediately commenced if the die cut with the device according to the design of Flaxman be adopted; the Governor General has been induced to waive his objection to the representation of an animal upon the gold coin of India, and to approve the adoption of this device."

The details of the new coinage were finally laid down by Acts XVII and XXIst 1835.

Græco-Roman Influence on the Civilization of Ancient India. Supplementary Note.—By VINCENT ARTHUR SMITH, M. R. A. S., *Indian Civil Service.*

Sir Alexander Cunningham has favoured me with communications which enable me to make certain corrections in and additions to my second paper on *Græco-Roman Influence on the Civilization of Ancient India*, published in the *Journal of this Society* for 1892¹.

Concerning the short record dated in the year 68, and numbered II. by M. Senart, I remarked (*page 56 of my paper*):—"It is not known to what object it was attached, but doubtless it was a sculpture of some sort." M. Senart's words are (*page 21 of his paper*):—"Le lieu d'origine de cette courte inscription ne m'est pas connu. Il est probable que, comme presque tous les monuments réunis au musée de Lahore, elle vient du pays des Yusufzais, sur la rive gauche du fleuve de Caboul, de Jamalgarhi, de Takht i Bahi, ou des environs.

Les caractères occupent une longueur de 97 centimètres; on peut en estimer à 3 centimètres et demi la hauteur moyenne. La hauteur de la pierre est de 10 centimètres. Ignorant jusqu'à sa provenance, nous n'avons bien entendu aucun renseignement sur l'objet qu'elle accompagnait primitivement."

Sir A. Cunningham, in a letter dated 17th June, 1892, clears up all doubts as to the place from which the inscription came, and proves that I was mistaken in guessing that it had been directly attached to a sculpture of some sort.

¹ See J. A. S. B. Vol. LXI, Part I for 1892, p. 50 Ed.

He writes:—"Regarding the inscription of S. 68 published by M. Senart, I can say that it was on a very large rough stone, which may have been inserted in a wall, but which could not have been the base of a statue. It was 5 feet 9 inches long, and from 3 feet to 1 foot 9 inches in breadth. The legend was on the edge. It weighed 12 maunds 7 seers [= 1008 lbs. avoirdupois, = 457 kilogrammes], when I got it, but I cut it down to 4 maunds 3 seers, before sending it to the Lahore Museum, where, as I conclude from your account, it is left unregistered as presented by General Cunningham—from Májí, 4 or 5 miles to the south of Fatchjang, ancient Chása, and to the south-west of Ráwal Pindi."¹

The inscription is certainly in the Lahore Museum, because M. Senart expressly states at the beginning of his essay that all the monuments described by him belong to that museum, and were communicated to him by the curator, Mr. L. Kipling.

Concerning the dated Hashtnagar inscription (*page 55 of my paper*) Sir A. Cunningham says that "The date may be either 274 or 284, but it cannot, I think, be referred to 78 A. D." I have already given up the suggestion to refer this date to the Saka era, and have assumed that the approximate date of the inscribed pedestal is A. D. 220 or 230. Sir A. Cunningham observes that the Panjtár inscription of a Gushán, or Kushán, Mahárāja, dated S. 122 is the latest "which can be referred to A. D. 78." If that record is rightly referred to the Saka era its date will be A. D. 200, which is not far from the approximate date obtained for the Hashtnagar inscription by using the era of Moga or Gondophares. I think it may now be safely assumed that the use of the Gandharian (Kharoshtri) character in Gándhára survived into the first half of the third century A. D. The disuse of this character in India proper does not imply its disuse in Gándhára. It is, no doubt, true that the Gandharian character is not used on the coins of Vasudeva, of whom we have an inscription in old Nágari characters dated S. 98, = A. D. 176, and that coins of Kanishka (KANHPKO) and Vasudeva (BAZOΔHIO) which Sir A. Cunningham believes to be posthumous, bear legends in old Nágari. But I see no difficulty in believing that at the same time the Gandharian character had a limited local currency for some purposes within the region of Gándhára.

When quoting (*page 59*) Prof. Rhys Davids, as authority for identifying the "village" Kalasi in the "island" of Alasanda, where king Milinda (Menander) was born, with the *Karisi nagara*, or town of Karisi

¹ For a notice of Fatchjang, see Archaeological Survey Reports, Vol. XIV, p. 24.

mentioned on a coin of Eukratides (circa B. C. 190), I was not aware that the identification had been made long before by Sir Alexander Cunningham, who published it in the *Numismatic Chronicle* for 1869, and again two years later in his '*Ancient Geography of India*.'¹

Sir Alexander Cunningham is of opinion that in the passage quoted by me from Prof. Rhys Davids' translation of the '*Questions of King Milinda*,'—"There is an island called Alasanda. It was there I was born,"—the word *dīpa* (Sanskrit *dwīpa*) should be translated 'region' or 'division of the world' rather than 'island.' He cites in support of this rendering the well known compound *Jambūdwīpa*, and takes *Alasandadīpa* to mean "the country of which Alasanda was the capital," Kalasi being "the same as Alasanda itself."

If, in the passage quoted, the word *dīpa* does not mean 'island', there is, apparently, no reason for supposing the Alexandria in question to have been on the Indus. Sir A. Cunningham places it, as will be seen from the passage to be quoted presently, at a village named Qipān or Hupīan, 27½ miles north of Kābul. Whatever be the true position of Alexandria or Alasanda, Prof. Rhys Davids' note at page 127 of the '*Questions of King Milinda*' referring to "Alexandria (in Bactria) built on an island in the Indus," is not quite accurate. The Indus was never included within the limits of Bactria, though the banks of the river may at times have been included in the dominions of the Bactrian kings.

My quotation (*same page*) from Professor Percy Gardner was also unfortunate. He describes the legend on the rare coin of Eukratides, giving the name of the town of Karisi as being "the conjectured reading of General Cunningham." This remark is inaccurate. The only word at all doubtful in the reading of the legend on the coin referred to, was *derata*, and the reading of this word has lately, Sir A. Cunningham assures me, been definitely established by a second specimen of the coin. The reading of the name 'Karisī' on the coin was never doubtful.

In order to prevent any further misconception, and to show clearly Sir A. Cunningham's views concerning the probable situation of Alexandria, = Alasanda or Alasadda, = Kalasi, presumably identical with Karisi, I had better quote in full the relevant passage from the '*Ancient Geography of India*,' page 28, which is as follows:—

"If I am right in identifying Begrām with the Kiu-lu-sa-pang of

¹ Prof. Rhys Davids informs me that he also was unaware that Sir A. Cunningham had made the identification previously, and will gladly take the opportunity of the impending publication of the second volume of the '*Milinda*' to acquaint his readers with the fact.

the Chinese pilgrim, the true name of the place must have been *Karsana*, as written by Ptolemy, and not *Uartana*, as noted by Pliny. The same form of the name is also found on a rare coin of Eukratides, with the legend *Karisiye nagara*, or 'city of Karisi', which I have identified with the *Kalasi* of the Buddhist chronicles, as the birthplace of Raja Milindu. In another passage of the same chronicle,¹ Milindu is said to have been born at *Alasanda*, or Alexandria, the capital of the *Yona*, or Greek country. Kalasi must, therefore, have been either Alexandria itself, or some place close to it. The latter conclusion agrees exactly with the position of Begram, which is only a few miles to the east of Opian. Originally two distinct places, like Delhi and Sháh Jahánábád, or London and Westminster, I suppose *Opian* and *Karsana* to have gradually approached each other as they increased in size, until at last they virtually became one large city. On the coins of the earlier Greek kings of Ariana,—Euthydemus, Demetrius, and Eukratides,—we find the monograms of both cities; but, after the time of Eukratides, that of Opiana disappears altogether, while that of Karsana is common to most of the later princes. The contemporary occurrence of these mixed monograms proves that the two cities were existing at the same time; while the sudden disuse of the name of Opian may serve to show that, during the latter period of Greek occupation, the city of Alexandria had been temporarily supplanted by Karsana."

* The Alexandria above referred to is the city founded by Alexander, and described by Pliny as "Alexandria Opianes", situated "sub ipso Cancaso". The modern name of the site identified with it is said to be variously spelled Opian, Opián, and (Malik) Hupian.

The Maháwanso calls Alasanna "the city, or capital, of the Yona country", *Yona naggarálasanna*. (*Turnour*, page 171). Turnour himself writes the name as Alasadda.

I have not specially studied the ancient geography of Ariana, and therefore abstain from pronouncing any personal opinion on the geographical questions raised in the preceding extracts.

¹ *Milindu-praṇa*, quoted by Hardy, in 'Manual of Buddhism', pp. 440, 516.

Uriyá Inscriptions of the 15th and 16th centuries.—By BĀNÚ MON MOHAN CHAKRAVARTI, M. A., B. L., Subordinate Executive Service of Bengal.

These inscriptions are 14 in number; 12 on the left and right side of the Jayavijaya door-way in the temple of Jagannátha at Purí, and 2 on the right side of the door-way in the temple of Mahádeva at Bhuvanesvara. They furnish important dates of Orissa history, and are the earliest known Uriyá writings found in Orissa.¹

The Jayavijaya door is that which leads into the Porch of the Jagannátha temple. The inscriptions are carved on the door-way. This door-way is of black polished *chlorite*. The left side inscriptions begin from a height of three feet, the right side ones from a height of one foot. They then take up about $\frac{3}{4}$ th of the remaining height. The lines run from west to east, and are nearly, but not always, straight.

The letters are Uriyá, and do not generally differ from the present types except in ञ, ञ and ॠ. They are $\frac{1}{4}'' \times \frac{1}{3}''$. The language is throughout Uriyá except at the end of the right side 5th inscription, where are quoted 4 stanzas of Sanskrit slokas. The orthography is often incorrect. The grammatical differences are small.

The inscriptions belong to four reigns, *viz.*,

(1) Kapileśvara Deva ..	...	...	5
(2) Purushottama Deva ..	...	...	4
(3) Pratáparudra Deva ...	...	...	2
(4) Mānagovinda Govinda Deva ...	...	...	1

12

The above sequence denotes the natural order of the kings in their succession; Kapileśvara Deva being the founder of the Súrya-varma and Govinda Deva being the overthrower of that dynasty.

The inscriptions begin with an enumeration of the various titles of the inscribing king. It is curious to observe that these titles increase in number and pomposity, the later we come. All these titles are still used by the Rájá of Purí, and may be found on the title-pages of Uriyá almanacs.

¹ A transcript of these 12 inscriptions, and a translation of tenth, have been given by Dr. R. L. Mitra, in his *Antiquities of Orissa*, Vol. II, Appendix, pp. 165-167. My readings of the same and my translations differ considerably; hence this article.

Next come the dates. The phraseology of the dates is peculiar. Take No. 1 of left side :—

"*Prabardhamána bijé rájye samasta 3 anka Sráhi Magúsir kru troyodasí Bhúmi bare*" =

On Tuesday, the 13th (tithi) of Margasir dark half in the third anka of the prosperous victorious reign of —.

Samasta means here "during."

Sráhi is a technical word, but has no particular meaning in the context.

The dates are of luni-solar months expressed in tithis of dark or bright half. The ankas are regnal years and something more. Certain figures are considered inauspicious and left out in counting. These figures are one, all numbers ending with zero (except 10), and ending with six. 1, 6, 16, 20, 26, 30, &c., should be left out of consideration in calculating the ankas. Hence 19th anka=16th year, 31st anka=25th year, and so forth.

To be of any practical use, the ankas and tithis require conversion into English calendar dates. Below are given the equivalent calendar dates arrived at in the following manner. From *Madalá Pánji*,* is found out the approximate year of the king's accession. Add the regnal year derived from the anka. The tithis are given as well as the week days. According to Professor Jacobi's Table (Part CCIX, Vol. XVII of the *Indian Antiquary*), the year in which the tithi in question fell on the stated week-day can then be easily found. Generally this year is within 20 years of the approximate year. These dates are next verified. The sources of verification are—

- (1) The dates of the other inscriptions ;
 - (2) The Muhammadan histories ;
 - (3) The biographies of Chaitanya ;
- (with respect to the reign of Pratáparudra Deva).

I. KAPILÉSVARA DEVA.

Inscriptions.	Uriyá dates.	Equivalent calendar dates.
1. Left, No. 3 ...	4th anka dhanu new moon, Sunday	= 9th December, 1436 A. D. (O. S.)
2. Left, No. 4 ...	41st† anka dhanu sukla 7, Sunday	= 14th December, 1466 A. D. (O. S.)

* *Madalá Pánji* is the chronicle of the temple of Jagannátha. Hitherto it has been almost the only source for the history of Orissa in the Hindu period.

† A mistake for 39th.

3. Left, No. 5 ... 35th anka Mesha Kṛishṇa
4, Wednesday = 25th April, 1464 A. D.
(O. S.)
4. Right, No. 2... 19th anka Mesha new
moon, Sunday = 12th April, 1450 A. D.
(O. S.)
5. Right, No. 3... 31st anka Kakrá sukla
12, Thursday = 12th July, 1459 A. D.
(O. S.)

II. PURUSHOTTAMA DEVA. .

1. Left, No. 1 ... 3rd anka Mārgasir
Kṛishṇa 13, bhau-
mibár = 20th Nov. 1470 A. D.
(O. S.)
2. Left, No. 2 ... } 2nd anka Mesha, sukla .
3. Right, No. 1... } Thursday = 12th April, 1470 A. D.
(O. S.)
4. Right, No. 4... 19th anka Siṃha, sukla .
8, Thursday = 18th August, 1485 A. D.
(O. S.)

III. PRATĀPARUDRA DEVA.

1. Left, No. 6 ... 4th anka kakrá, sukla 10
Wednesday = 17th July, 1499 A. D.
(O. S.)
2. Left, No. 7 ... 5th anka dhanu 3 (?)
Kru (?), Monday = ?

IV. GOVINDA DEVA.

1. Right, No. 5... 4th anka bichhá, sukla 3,
Tuesday = 7th Nov. 1542 A. D.
(O. S.)

INSCRIPTIONS IN THE TEMPLE OF JAGANNĀTHA.

Left side.

No. I.

Length 4'-6" × 10"—Lines 5.

- L. 1 वीरभी गजपति गौरेक्षर नवकोटी कर्णाट कक्षरकेक्षर प्रताप
औष्टमोत्तम
- 2 देव माहाराजाह प्रवर्द्धमान विनेराज्य समकक्ष चक्षु आसी नमुक्षिर

- 3 जयोदसि भुमिबारे श्री पुरुषोत्तम कटके आइगा होइना दखिबदिगर
 4 दखोआसि ओहोर आम्मे ब्राह्मणहु काडिनु दखोगोयचहरबहि काडिनु
 5 एहा ये हरह से हरिना दोष पाइ ।

Translation.

On Tuesday, the 13th (tithi) of Margasir dark half of the 3rd anka of the prosperous and victorious reign of the warrior, elephant-lord, king over Gaṇḍa and the ninety millions (subjects) of Kārṇāṭa and Kalabaraka (probably Kulbarga), of the powerful Purushottama Deva Mahārāja, while at camp Purushottama, (i. e., Puri) it was ordered :—I remit the levying from the Brāhmins of the Chaukidārī Tax (Daṇḍo-āsi Ohor) in the south ; I cease to resume the waste lands and the pastures ; he who takes, gets the sin in theft.

Left side.

No. II.

Length 4'—8" × 1'—9"—Lines 11.

- L. 1 वीर श्री गजपति गौडेस्वर नवकोटी कर्णाटकनवरगेश्वर प्रताप श्री
 पुरुषोत्तम देव माहाराजाङ्ग समस्त
 2 २ आही मेस सु १२ ग्ठवारे श्रीपुरुषोत्तम कटके विजे समय पुरुषोत्तम
 देव माहाराजाङ्गर दत्
 3 दखिबदिगदखपाटे श्रीपुरुषोत्तम जगन्नाथदेवङ्गर पणामान देसमानर
 दखीबदिग अवदान सेवक
 4 ङ्गर देसमानर प्रमेश्वरङ्ग भोगदेसमान अवदान प्रमेश्वरकु नि (?)
 ब्राह्म (?) सेवकमानङ्ग
 5 अवदान सेवकमानङ्ग काडिनि ए पुरुषोत्तम देव माहाराजाङ्ग भोगकु
 अन्तरोधविषे माधोतिन ग्राम
 6 धान भ ५०० कउड़ी का २००० कामनपुर ग्राम ए भोगकु होइना
 परव देदिबं माजगा
 7 (7 letters illegible) महादेवङ्ग भोगकु दक्षीय
 8 भोग दखपाटे बाँआचास विसे गोप
 9 पुर ग्राम दिनि ए अवदानमान ए भोग
 10 देस ने हरह से जगन्नाथङ्ग होइ

11 हरह ।

Translation.

On Thursday the 12th (tithi) of Mesha bright half of 2nd (anka) of the warrior, the elephant-lord, the king over Gaṇḍa and the ninety millions in Karpāṭa and Kalabaraga, of the powerful Purushottama Deva Mahārāja while encamping at camp Purushottama, the (following) gifts of Purushottama Deva Mahārāja in Dakṣiṇadiga daṇḍapāṭa :—(1) for god Jagannātha of Purushottama, a gift of the old māla tracts in the south ; (2nd) for the bhoga of the god a gift of lands out of the lands of the sevaks ; (3rd) gifts to the priests engaged in sleeping (?) the god, (these) I leave to the sevaks. As offerings of Purushottama Deva Mahārāja (personally,) for bhoga, the village Mādhotila in Antarōdha Bisi, paddy 500 bharans, cowries 2,000 kālāns and the village Kāmalpur—these are for the bhoga. For the festivals, &c., of other gods, goddesses and the Mahādeva I bestow the village Gopapura in Bāñchās Bisi of Dakṣiṇadiga Daṇḍapāṭa. These gifts, these lands, he who takes away, rebels against Jagannātha.

Note.

Purushottama Deva got on the throne after a civil war. In this inscription, he hastens to propitiate by gifts the gods and their priests. The gifts are of two sorts :—first he confirms the old grants ; secondly he gives in addition three more villages. The phraseology is tautological and somewhat ambiguous. Dakṣiṇadiga Daṇḍapāṭa is the name of a Division (No. 14 of Sarkār Kaṭak. Abul Fazl). It is not now in existence. The bisis Antarodha and Bāñchās still exist as pergunnahs. Gopapura is presumably the present Gope, where a thānā has been located. The other two villages cannot be traced.

Left side.

No. III.

Length 2'—0 × 7"—Lines 8.

- L. 1 वीर श्री प्रताप कपिजेश्वर देव माहाराजाङ्गर विजय राज्ये समस्त ४
 अङ्ग आही
 2 धनु अमावै सौरिवारे श्री पुष्योत्तम कटके परमेश्वरङ्ग दर्शन समय
 महापात्र
 3 ककाह सान्तरा महापात्र जकसरसेन गरेन्द्र महापात्र गोपीनाथ मंग
 राज महापात्र
 4 काशीविद्याधर महापात्र वेकनगर प्रहराज महापात्र बंखन पुरोहित
 पटनायक दामोदर महा

- 5 सेनापती घाह परमेश्वरञ्च श्रीचरञ्च अग्रते भोग परिक्षा पात्र अभिसर्ग
सुद्रहस्तर गोच
6 रे बोद्धना मुदञ्चे श्री पुष्योत्तमदेवञ्च देउलदारे लेखन करिवा आम्बर
ओड़ीसा रा
7 ज्यर लोख कउड़ी मुलकर न्याय्य छाड़िनि छाड़िनि छाड़िनि एहा राजा
होइ जे लङ्कह से श्री
8 जगन्नाथ देवञ्च द्रोह करइ ।

Translation.

On Sunday the new moon in Dhanu of the 4th anka of the victorious reign of the warrior, the powerful Kapileśvara Dēva Mahārāja, at camp Purushottama while paying respects to the god, in presence of Mahāpātra Kakāi Sántarā, Mahāpātra Jalasara Sena Narendra, Mahāpātra Gopinātha Mangarāja, Mahāpātra Kāśī Vidyādhara, Mahāpātra Bolaśvara Praharāja, Mahāpātra Lakhan Purohita, Paṭanaik Dāmodara the generalissimo, before the feet of the God, and in the cognisance of Pātra Agni Sarmā, the examiner of Bhogas and the seal-bearer, spoke (the king):—Engraver, write on the door of the temple of the God Purushottama—the tax levied on salt and cowries I remit, remit, remit. Whoever being king, violates this, rebels against Lord Jagannātha.

Note.

This is the earliest inscription of the series. According to the Madalā Pānji, Kapileśvara Deva was an usurper, who from a minister became the king. He remits the taxes on salt and shells, apparently to popularise his reign. Of the eight officers named, Kāśī Vidyādhara and Jalasara Sena Narendra are mentioned in the Mādulā Pānji to have been associates of the king in his youth.

Left side.

No. IV.

2 parts.

Part 1—4'—4" × 11"—Lines 9.

- L. 1 श्री वीर प्रताप कपिलेश्वर नवकोटी कर्णटकनवरमेश्वर गजपति गौड़ेश्वर
देव महाराजाञ्च विजे राइजे समस्त ४१ आहो
२ भुज सुलभ सप्तमि रवोवारे श्री पुष्योत्तम जगन्नाथ देवञ्च पद्मपादञ्च
महो विमिले कपिलेश्वर रणाय सेवा करिदिजे रत्न

- 3 तोफरमान ओ भूजर रत्नशंख चक्र दुइ प्रमेश्वरङ्ग मगहिंकि सुनायोमाङ्ग
रमान आनि प्रवेश कले हासिक माहा
4 पात्र जमसर माहापात्र विन्धेश्वर माहापात्र करसु माहापात्र नाथ
माहापात्र एते जोके प्रवेश कले नन्दि माहापात्रङ्ग अधिकारे
5 मान्यामण्डपे चउदशतप्रकरण भोगरागर समस्तन्तो थोइ देनौ ।
प्रमाणे लागि कराइले रत्नमुकुट ८ काणफुल जोड़ातुंग
6 न ४ गोड़का निसव्वा करि थोड़ा ८४ हिरामाणिक विचित्रमान २
नाना नाएक मुदि १२ मुकुता
7 थाउलि ८ मुकुता वड़कण्ठिमान ४ माणिकसुता मा ८ मरकत जाउलि
८ मरकत मुकुता मा ५ नानारत्नकपद्रक ४ मरत्न
8 तिसरसरे मानिकसुता पदसरि ४ मुकुता तीसरा उतुरी २ एका
रत्नहारे १ मुकुता तोफर २
9 पादपलव २ नाना नाएक बाऊटी जोड़ा १२ हिरामानिकि वला जो २
जाजितोफर २

Part 2—1'—9" × 7"—Lines 6.

- L. 1 नाना परताड़ थोड़ा १ पाऊड़ ४ मुकुता कङ्कनपट ६
2 कान्तियरकवर + कटी मेखला कनकभूजाइ मान ५
3 सुना योगिन् १ नाना पदार्थ शंख चक्र रत्न मा
4 ६ १६२ सुना + + + मोटिए श्रीकपिलेश्वर र
5 जाए एहा जगनाथ महाप्रभु दिनि एहा नेमा वो
6 लि ये मनरे धरइ से श्री जगनाथङ्ग मोहकरइ ।

Translation.

On Sunday, the 7th (tithi) of Dhanu bright half in the 41st (anka) of the victorious reign of the warrior, the powerful, the elephant-lord, the king over Gaṇḍa and ninety millions of Karmāṇa and Kalabaraga, Kapileśvara Deva Mahārāja, out of devotion to the lotus-feet of the Lord Jagannātha of Purushottama, Kapileśvara Deva Rāja gave for sacred use:—Ornamented wrist-ornaments (toḍhar), and decorated conch and shells, two for the Lord's arms. For the bhoga of the god, the following (men) brought a supply of gold, viz., Hāsika Mahāpātra, Jamasara Mahāpātra, Viśveśvara Mahāpātra, Karamū Mahāpātra and Nātha Mahāpātra, these (men) supplied, under the superintendence of Nandi Mahāpātra; all (the articles) were placed in the audience hall

for bhogas of 1400 sorts. In accordance with directions (of the Sāstras, the following) were put on the body (of the Lord), *vis.*, one ornamented crown, earrings 8, Tungal in pairs 4, small earrings counted at 14 pairs, necklaces set with diamonds and rubies 2, rings set with various sorts of stones 12, pearl ear-ornaments (jáulis) 8, large necklaces of pearls 4, necklaces of rubies 8, emerald ear-ornaments (jáulis) 8, necklaces of emeralds and pearls 5, lockets set with various sorts of stones 4, three-rowed emerald neck-ornaments with pendant ruby parrot 4, three-rowed pearl breast-ornaments (uturis) 2, ornamented necklace 1, pearled wrist-ornaments (todhor) 2, golden feet set with stones (páda-pallabas) 2, bangles set with various sorts of stones 12 pairs, balás or wrist-ornaments of rubies and diamonds 2 pairs, netted tor-dhars 2, bracelets or partárdhas one pair, feet-ornaments or páluaráhs 4, pearl bracelets 6, waistlets with golden-drops (?) 5, gold Jogibha (?) 1, the gold of (these) various things, and of the conch and shell is 192 márdas, one (illegible); the king Kapileśvara made a gift of these to Lord Jagannátha. He who intends to take them, rebels against Jagannátha.

Note.

The inscription gives an interesting enumeration of the various ornaments bestowed by Kapileśvara Deva on Jagannátha. Many of these ornaments are still in use.

Left side.

No. V.

2'—8" × 9"—Lines 6.

- L. 1 वीरश्री गजपति गजदेसर प्रताप कपिलेश्वर देव महाराजाध्वर विजे राज्ये
 2 समस्त ३५ आदौ मेस क ४ बुधवारि भो जगनाथ तोह सेवक ए
 3 मतं जनाउआहि रादइजजाके एस आन्तमानङ्ग। सुँइ पाइक राउतकु करि
 4 + + + + + वाजकालु पोसि आनिनि एमाने मोते सनुहेँ
 5 एमानङ्ग सुइ ये याहा अनुरूपे विहिवी नियोगिवि विभो जगनाथ
 6 एकथा मोहर दोस अदोस विचार।

Translation.

On Wednesday the 4th (tithi) of Mesha dark half in the 35th (anka) of the victorious reign of the warrior, the elephant lord, the king over Gauda, the powerful Kapileśvara Deva Mahārāja:—Oh Jagannátha, thy servant thus informeth the high officers in the kingdom. From

soldiers and servants (illegible, probably "up to them"), I looked after (all) from boyhood, now they have forsaken me. I will treat them as they deserve. Lord Jagannātha, judge the correctness or incorrectness of mine (acts).

Note.

According to Mādālā Pānji, in the 35th anka of Kapileśvara Deva's reign, the Zemindars of Kundajori broke out into rebellion. From the context they appear to have been assisted by many of the king's own officers.

Left side.

No. VI.

3' - 3" × 1' - 3" — Lines 10.

वीर श्री गजनि गड्डेश्वर नवकोटीकर्णाट कलवर्गसर विरवर श्री
प्रतापरुद्र देव

माहाराजाक्षर समस्त ० अक्षर आहो ककड़ा सु १० बुधवार अवधारीत
आहंगा प्रमाणे वड़

ठाकुरक्ष गीतगोविन्दठाकुर भोगवेले ए नाट होइव । संभधुप सरिणा
ठारू

वड़ सिंगार परियन्ते ए नाट होइव । वड़ ठाकुरक्ष संपरदा कपिलेश्वर
ठाकुरक्ष वन्धा

नाचणीमान पुख्या संपरदा तेसंगी संपरदा एमाने सविहें वड़
ठाकुरक्ष गीतगो

विन्द ऊँ आनगीत न सिखीवे । आनगीत न गाइवे । आन नाट होइ
परमेश्वरक्ष क्हासुरे न

हव ए नाट वितरके वइखाम गाखण चारीजन अहन्ति एमाने
गीतगोविन्द गीतहि से गाइवे

एहाक्ष ठारू अशिक्षितमाने एकश्वररे श्रुणी गीतगोविन्द गीतहिं से
शिखीवे आनगीत न शिखीवे एहा

जे परीक्षा आनगीत नाट कराइले जानी से जगन्नाथक्ष मोह करइ ।

Translation.

On Wednesday the 10th (tithi) of Kakadā, bright half in the 9th anka of the warrior, the elephant-lord, the king over Gauḍa and ninety millions of Karpāṭa and Kalabāṅga, the mighty Pratāparudra Deva

Máharāja according to the ascertained orders:—Dancing will be performed thus at the Bhoga time of the elder Thákur (*i. e.* Balaráma) and Gítagovinda Thákur (*i. e.* Jagaunátha). This dancing will be held from the end of evening dhúpa up to the time of Barasingár (bed time) dhúpa. The batch (of dancing girls) of Bara Thákur, the fixed female dancers of Kapileśvara Thákur, the old batch, the Telangá batch, all will learn no other song than Gítagovinda of Bara Thákur. They will not sing any other song. No other kind of dancing should be performed before the god. Besides the dancing, there are four Vaishṇava singers; they will sing only the Gítagovinda. Hearing in one tone from them, those who are ignorant will learn the Gítagovinda song; they should not learn any other song. That superintendent who knowingly allows other songs to be sung, and other dances to be performed, rebels against Jagannátha

•
Note.

This edict directs what songs are to be sung and what dances are to be performed at the time of night bhogas (from evening to bed-time). The songs will be the songs of Gítagovinda and nothing else. The dancers were in four batches, and they were taught by four Vaishṇava singers.

Left side.

No. VII.

वीर श्री गजपति गौड़ेश्वर नवकोटि कर्णाटकनवरगेश्वर प्रताप
श्रीरुद्रदेव महाराजाश्च समस्त
५ अक्ष आदि क्षतु तिनदिन (?) सोमवारे, + + + कटक विजयसमय

(Rest illegible).

Translation.

On Monday, the 3rd (?) of Dhanu in the 5th anka of the warrior the elephant-lord, the king over Gauḍa and the ninety millions of Karnaṭa and Kalabaraga, the powerful Rudra Deva Mahárāja, at camp. . . .

•
Note.

This inscription is the lowermost. Ordinarily the place is dark, and the pilgrims while passing through the door, feel the way by touching the wall. In this manner almost all its lower part has been rubbed off.

Right side.

No. I.

in three parts.

Main part :—2' 9" × 9"—Lines 5.

बीरश्री गजपति गौड़ेश्वर नवकोटीकर्णाटकनवरगेश्वर
 प्रताप एषोत्तम देव माहाराजाङ्गर समस्त २ आही मेस
 सुकन १२ म्बारे श्री एषोत्तम कटके विजे समए
 दन्तरत्नपलङ्ग १ रत्नकनकशङ्खसिंहासने १ रत्नकृति १
 रत्नखट १ सुनामार्यणीपट १ रत्नवेष्टचञ्चर २ ।

Western part :—Lines 7

6½" × 11"

एषोत्तम माहाराजाङ्गर दत्तर
 तपलङ्ग २
 रत्नकानफुल
 ४ मेरुगर्भं
 वाङ्कटि थोड़ा २
 रत्नविद्यना १
 चन्दिषागो १

Eastern part :—Lines 5

1' 0" × 10"

रत्नदर्पण गोटिए
 १ एहानेमा
 रे ये मनरे धरइ
 से जगनाथ देवङ्ग
 जोइ करइ ।

Translation.

On Thursday, the 12th of Mesha, bright half in the 2nd (anka) of the warrior, the elephant-lord, the king over Gauda and ninety millions of Karṇāṭa and Kalabaraga, the powerful Purushottama Deva Mahārājā, while encamping at camp Purushottama :—Ornamented ivory couch 1, ornamented throne with flags and jars 1, ornamented umbrella 1, ornamented bedstead 1, golden-handled broom 1, ornamented-handled chauris 2.

Eastern part.

Gift of king Purushottama :—
 Ornamented couches 2,
 Ornamented earrings 4,
 Merugarbha wristlets 2 pairs,
 Ornamented fan 1,
 Chandia (hair-ornament like
 moon) 1.

Western part.

Ornamented mirror 1. He who
 thinks of taking these, rebels
 against Lord Jagannātha.

Note.

This inscription seems to be a continuation of No. II left side, and is of the same date.

Right side.

No. II.

2' 5" × 1' 2"—Lines 8.

वीर श्री गजपति गड्डेश्वर प्रतापकपिलेश्वर देव
 माहाराजाह्वर विजेराज्ये समस्त १६ आहीमेस अमा
 वै रवीवारे मलिकापरिसादिग विजेकारि बाड्डा कटकाह
 श्री पुरुषोत्तमकटके वीरमोनोह विजे समय श्रीवरज
 अग्रते कोठवर सान्तरा परिक्षमहापात्र रघुदेवो गरिम्भ
 जनाहं छाड़कराहनाकु आहंगां होइना श्री पुरुषोत्तम
 पुखरिक्त गोपसाढ़ी देनि यद्यकु ये अवानघं से जग
 नाथ देवहु मोह करइ य मुदले केनाह खुगिट्या लिहाइना ।

Translation.

On Sunday the new moon in the Mesha of the 19th anka of the victorious reign of the warrior, the elephant-lord, the king of Gaṇḍa, Kapileśvara Deva Mahārāja, having conquered the side of Mallikā Parisā, on the journey back, at camp Purushottama, while taking his food, the storekeeper and superintendent Raghu Deva Narendra having made known (to the king) it was ordered :—I give to god Purushottam the Sāri cloth known as Puṇḍariksha gopa. Whoever violates this rebels against Jagannātha. This writing Kelai Khunṭiā inscribed.

Note.

The Mādālā Panji mentions the conquest of a Mallikā country in the 21st anka—21st may be a mistake for 19. "Puṇḍariksha gopa" may be the name of a village.

Right side.

No. III.

4' 1" × 1' 4"—Lines 7.

वीर श्री गजपति गड्डेश्वर नवकोटीकर्णाट कन्नवरजेश्वर प्रताप
 कपिलेश्वर
 देव माहाराजाह्वर विजेराज्ये समस्त ११ आही ककड़ा सु १२
 अवादि श्री देव

बोत्तम कटके दखीनघरे माजयामखणे विजे खर अवधारीत आग्यां
 वोइजा सुदसे भो ओजगनाथ मोहर वाहिज अन्धन्तर समस्तत तु जानु
 मोहर येते रतन पदार्थ अछि से तोहर रहा उ आवर आन धन
 जिस अछि सुई ब्राह्मण हाथरे ताहा येते देह पारइ ताहा देवि
 ए भूमिखण्ड तु याहाकु अनुग्रह कर मोहर से वेप + वे ।

Translation.

On Thursday, the 12th of Kakra, bright half of the 31st anka of the victorious reign of the warrior elephant-lord, the king over Gauḍa and ninety millions of Karpāṭa and Kalabaraga at Camp Parushottama, while holding court in the audience-hall of the southern block (of rooms), it was ordered to be inscribed;—Oh Jagannātha, thou knowest everything of mine both external and internal. Whatever precious things I have, I will bestow on the Brāhmins as much as I can. He, on whom thou pleasest to bestow this land, is my (illegible)

Note.

Herein the king humbles himself before Jagannātha and promises to make liberal gifts to Brāhmins. The inscription appears to be the outcome of some heavy troubles or impending disasters. The usual curse at the end is wanting.

Right side.

No. 1V.

4' 10" × 10"—Lines 7.

- L. 1 वीरश्री गजपति गडडेश्वर नवकोटीकर्णाट कलवरगेश्वर प्रताप श्री
 गजपति पुरुषोत्तमदेव माहाराजाङ्गर
 2 विजयराज्ये समस्त १६ अङ्ग आही सिंह शुक्ल ८ गुरुवारे वाराणसि
 कटके श्रीनन्द गोपालप्रिय जगतीर दक्षिणमेढरे वड़ अवकाशे
 3 समस्त वेहोरा माहापात्र माहापात्र पात्रसनि मिश्र खटन्ति वड़ा
 लेङ्गा समस्तङ्ग सुकाविलारे आहगां होइजा आम्मे अनुवव करि मुनी
 देखी ए पृथिवी येतेकाल
 4 चाह तेतेकाल ए ओड़ीभारण्यर राजामानङ्ग तिसार अङ्ग सनु
 राजामाने ब्राह्मणङ्ग दान देवा शान्तिपुर्वक मनजोग करि धनखी
 प्राब राज्य एहि चारि कथार केवेहें
 5 ब्राह्मणङ्ग नियोग न करिव । एहि चारि कथारे निभोजिके ब्राह्मण

जाग कर्मैहि से करइ ह (?) जन करइ मुं (?) इतधा + + +
 नेकति आराध्य नाच + धि मानहु आदेश
 6 वचन कहुन करि ये अवा आन करइ से जगन्नाथ कु जोइ करइ । से
 महापातक । अति पातक बि + को समस्त पातक कजार पक्ष पाह
 7 सर्वुंहे एकथा वृढ़करि मनरे धरी आम्बर उपदेश कर ! कर ! कर !

Translation.

On Thursday the 8th of the Simha, bright half in the 19th anka of the victorious reign of the warrior the elephant-lord, the king over Gauda and the ninety millions of Karnāṭa and Kalabarga, the powerful Purushottama Deva Mahārāja, at camp Bārānāsi (Kaṭak) while holding his great leisure in the southern portion of the royal residence named Gopāla-priya, Behorā Māhāpātra, Māhāpātra Pātra-s (m. ?)-api Mīśra, and the old Lenkā being present it was ordered :—Feeling, hearing and seeing, I advise the kings of Orissa as long as this world lasts, all ye kings, ye are to make gifts to the Brāhmins with peaceful and attentive mind. Never deprive Brāhmins of these four matters—wealth, wife, life and land. These four things not being deprived, the Brāhmins will perform the Jāgas, will not deceive (?) (illegible). Whoever, violating these advices and sayings, does otherwise, rebels against Jagannātha. He is a first class sinner (?), a great sin (illegible) gets the effect of all the sins. Let all, bearing in mind this fact, according to my edicts do ! do !

Note.

The inscription is long and partly illegible. Some of the letters have been swallowed up by a crack in the stone; others have been effaced by the constant rubbing of pilgrims' hands. Bārānāsi is the old name of Kaṭak and still survives in Birdānāsi, the westernmost part of Kaṭak along the Kātjori river. Lenkā is an officer whose duties are not known.

Right side.

No. V.

5' × 2' 3"—Lines 18.

- L. 1 श्री बीर गजपति गजदेवर नवकोटी कर्णाट कलबर्गेश्वर श्रीम (हा)
 राजाधिराज मान गोविन्द श्री
 2 गोविन्द देव राजा श्रीश्रीमद्विरवर प्रताप श्रीश्री प्रताप देव
 महाराजाधिराज विजे राज्य समस्त

- 3 ३ अङ्ग आदि विद्या सुकल दृतिद्या मङ्गलवारे जगमोहन मखडे
श्रीजगन्नाथ ह्यासुरे ज
4 नाइले भो जगन्नाथ तोहपद्मपाद देखी आसिवा बीवारे विना सवुडि
नकां विभं उदयगौरि स
5 रि परिजन्ते खदेशी परदेशी जात्रोमागङ्गर दाख प्रति × × × ×
6 गङ्गातर राजामाणे × ×
7 पालना करिवे जे एकथा अन्यथा क
8 रह से श्रीजगन्नाथकु द्रोह करइ
9 खहस्ते ब्राह्मण वध कला पाप
10 गत्वा द्राविनो भूमिपाण } Rest illegible by plastering
11 दते रामचन्द्र
12 प्राणा कासे
13 साजना }

Translation.

On Tuesday the 3rd of Bichhá bright half of the 4th anka of the victorious reign of the warrior the elephant-lord, the king over Gauḍa and the ninety millions of Karpāṭa and Kalabaraga, king of kings, the powerful Mānagovinda Govinda Deva Rājā, Pratāpa Deva Mahārājā, in the porch and before Lord Jagannātha he thus made known (his prayer) :—Oh Jagannātha, without going and coming to see your lotus feet all appear as hell. The gifts of pilgrims (of places) up to Vindhya and Udayagiri mountains, whether native or foreigner (rest illegible). The kings of Garjāt (illegible) will obey. He who violates this order rebels against Jagannātha, and gets the sin of killing a Brāhman with one's own hands.

(Here follow four stanzas of Sanskrit slokas).

Note.

From the date, and the name, Māna Govinda Govinda Deva appears to be the same as Govinda Bidyādhara of the Mādālā Pānji. He was a minister of Pratāpa Rudra Deva, and became the prime minister during the short reigns of his two sons. Finally he murdered them and ascended the throne himself.

BHUVANESVARA TEMPLE.

Right side.

No. I.

2' 4" × 6"—Lines 6.

- L. 1 विर श्री गजपति गडडेसर नवकोटी कर्णाट कलवरकेसर प्रताप
 पुरुषोत्तम देव
 2 माहाराजपुर विजे राज्ये समस्त अ १६ अ खाहितुन छर रइवारे
 कृतिवासक
 3 ठके पुजा अवकाशे आग्यां होइनाय ये विसि वेहारा चन्द्रवाय ये
 4 जाक करेइ सेहि ताहाकु न जागइ एतेतारि ये तारकर्ता निजर
 प्रति भुवने
 5 स देवपु ताहाइ ये राज मोहा आइग्यां होइना विसि वेहारा
 जिहाइना
 . 6 सरखे .

Translation.

On Sunday the 2nd of Tula, dark half in the 19th anka of the victorious reign of the warrior the elephant-lord, the king over Gauḍa and ninety millions of Karnaṭa and Kalabaraka, the powerful Purushot-tama Deva Mahārāja at camp Kṛitibās during the pūjā leisure, it was ordered:—He who throws magical arrows unto Bisi Behārā will not succeed. In spite of this (order), he who does so, is cursed by (the oath of) god Bhuvaneṣvara, he is a rebel. By order of Bisi Behārā inscribed. All (hear).

Right side.

No. II.

2' 3½" × 5"—Lines 6.

- L. 1 श्रीविर कपिलेसर देव माहाराजपुर विजेराज्ये समस्त ४ अङ्ग आही
 2 मिथुन संक्रान्ति कृष्ट ६ मङ्गलवार कृतिवास कटके भितर पुजा अवकासे
 3 राय गुब वासु माहापात्र भुवनेसर माहापात्र एहुइ हे आनि
 जिहाइये
 4 दुइसर मोचरो आग्यां वोणि होइना आम्भर ओडिसा राज्ये नेते राजा
 5 मूख सवुहे राजाकु हिते प्रति ये आपना सदाचारे थिवे असदुमार्गे
 6 सरखि ये राजाकु असहिते प्रतिसे राजावाहार करि ताहार सर्वस हरि ।

Translation.

On Monday the 9th of the Mithúna, dark half Sankránti in the 4th anka of the victorious reign of the warrior Kapileśvara Deva Mahárāja, at camp Kṛitibás during the inner pújá leisure, it was ordered in the presence of Raiguru Básu Máhápátra and Bhuvaneśvara Máhápátra who caused (this) to be inscribed:—All the kings in my Orissa kingdom should work for the good of the (paramount) sovereign, should keep virtuous ways, should not remain in bad ways. If they act badly towards the sovereign, they will be expelled from the kingdom and all their property confiscated.

Note.

These two inscriptions are on the right jamb of the doorway leading to the porch of the Bara Deúl at Bhuvaneśvara. They are inscribed just in the centre at a man's height. No corresponding inscriptions are to be found on the left jamb.

The general remarks made in the Jagannátha inscriptions apply, *mutatis mutandis*, to these also. The dates do not seem correct. The tithis of the years in question do not fall on the week-days stated.

The Topography of Old Fort William.—By C. R. WILSON, M. A.

In the present paper I propose to lay before the Society the results of certain excavations made during the last four months of the year 1891 and the first four months of the year 1892, on the site of old Fort William, Calcutta.

These are not the first excavations which have been made at this spot. In 1883 Mr. R. R. Bayne, while erecting the East India Railway Offices in Fairlie Place, came across considerable portions of the old fort walls. He reported his discoveries to the Society in a paper which will be found in the Journal for 1883, Vol. LII, Part I, No. II.

The general position of the old fort with its adjacent warehouses is well-known. It stood on the ground now occupied by the General Post Office, the New Government Offices, the Custom House, and the East India Railway House. The warehouses built along the south side of the fort skirted Khoila Ghat Street. The north side was in Fairlie Place. The east front looked out on Clive Street and Dalhousie Square. Behind it was the river which then flowed further east than at present.

The fort was in shape an irregular tetragon. Its walls were built of small thin bricks strongly cemented together.

The old Fort.

According to Orme, "its sides, to the east and west extended 210 yards, the southern side 130, and the northern

side 100. It had four bastions mounting each ten guns. The curtains were four feet thick, and like the factory of Cossimbazar, terraces, which were the roofs of chambers, formed the top of the ramparts; and windows belonging to these chambers were in several places opened in the curtains. The gateway on the eastern side projected, and mounted five guns, three in front and one on each flank towards the bastions. Under the western face, and on the brink of the river, was a line of heavy cannon mounted in embrasures of solid masonry; and this work was joined to the two western bastions by two slender walls, in each of which was a gate of pallisadoes. In the year 1747, warehouses had been built contiguous to the southern curtain, and, projecting on the outside, between the two bastions, rendered them useless to one another. However the terraces of these warehouses were strong enough to bear the firing of three pounders which were mounted in barbett over a slight parapet." There were also blocks of central buildings within the fort. It had two gates on the river side besides that on the east front.

When in 1883 Mr. R. R. Bayne began to dig at the corner of Fairlie Place for the purpose of laying down the foundations of the East India Railway House, Mr. Bayne's discoveries.

he almost immediately came across remains of old walls built of small thin bricks such as have long ceased to be used. These were the walls of the old fort. Mr. Bayne followed up the indications thus found, and in the end was able to put together an almost complete ground plan of the north end of the fort. As a detailed description of these discoveries has been already placed before the Society, it will be quite unnecessary for me to attempt to give any further account of them here. Nor do I wish at present to offer any criticisms upon the suggestions and theories which naturally occurred to Mr. Bayne in connection with his discoveries. I shall at once proceed to set forth the results which have been obtained since 1883 by a persistent search of the records and by recent excavations made on the spot.

The first great step towards completing the work so well begun by Mr. R. R. Bayne was taken by Mr. T. R. Munro, who discovered in the British Museum Mr. Munro's discovery.

a copy of a large map of old Calcutta on the scale of 100 ft. = 1 in., dated 1753. The map, it appears, was drawn by a Lieutenant Wells of the Company's Artillery, and was designed to show a projected new fort, but it also shows the old fort in great detail. A photograph of this plan was presented to the Asiatic Society in 1889 by Mr. Munro, and it is with this photograph in my hands that I have been able to carry out extensive excavations of the site of the old fort in the years 1891 and 1892 and thus complete the work of defining the topo-

graphy of the place. The plan, it is true, is not quite accurate, but it is infinitely superior to the little rough sketch of the fort found in Orme's history, which was all Mr. Bayne had to go upon.

The plan suggested a further searching of the records, both here and at home, to see if they could cast any further light either upon the plan itself, or on the projected new fort of 1753, or on the state of the old fort generally. Through the kindness of Mr. Forrest, I was enabled to see such records bearing on the subject as are now preserved in the Imperial Library at Calcutta, but I found that they were very meagre. Dr. Busteed, however, most generously devoted a considerable amount of his valuable time to looking up the records at home, and has furnished me with a complete list of all the passages to be found in the extant records which have any bearing whatever on the old fort, and on the question of improving it, or superseding it, which seems to have been so often discussed during the four or five years which preceded the tragedy of the Black Hole. These extracts are provokingly incomplete. They refer to fuller documents, but these fuller documents are not now forthcoming, having been all destroyed. Four plans are mentioned, viz., Colonel Scott's, Captain Jones's, Simson's and Plaisted's, but none of these could be found by Dr. Busteed at the India Office. It is only by some lucky chance that a duplicate copy of Scott's, or Wells's plan found its way into the King's library at the British Museum. As, however, these extracts bring before us very vividly the circumstances under which the plan was drawn up in 1753, I will here give them in full, together with Dr. Busteed's valuable comments on them, before proceeding to speak of the plan itself.

1. From President and Council, Bengal, to the Court of Directors,
Extracts. Scott and Wells. the 28th February, 1754.

Colonel Scott having laid a project before the Board for securing this settlement against any attack from a country force which, in the present juncture, ought to be guarded against, and as we imagine the expense of it will not be very considerable, we have complied with his proposal and directed him to set about it as soon as possible. A copy of that project we transmit yr. Honours in this packet as we did not chuse for the sake of secrecy to enter it after the consultations.

2. From President and Council, Bengal, to the Court of Directors, the 7th September 1754.

When Col. Scott proceeded to the coast he requested we would permit Lt. Wells to carry on the works he had planned at Perrin's in

his absence which we accordingly complied with. * * * *. Col. Scott in consequence of Mr. Saunders and Council's¹ request for relieving Major Lawrence in the Field, left us on the 18th March, but it is with concern we informed yr. Hons. he died at Madras on 12th May of a violent fever.

3. From the Bengal Government to Wm. Watts at Moorshedabad, the 22nd August 1755.

It has hitherto been very unfortunate to this Settlement that every gentleman, who has had capacity or been appointed by our employers to fortify this place, have not lived even to make a beginning on the plans proposed,² *we have therefore agreed to wait our Masters' last commands by this year's shipping*, when if they are absolute and the situation of affairs in Europe portends war we must employ those who have the most experience and knowledge to execute plans of fortification, and this we shall put in practice without showing any diffidence to the right we have of securing our Settlement.³

4. A letter, signed by Messrs. Drake and Manningham, to the Court of Directors, the 3rd September 1755.

The death of Col. Scott put a check to our pursuing his plan for securing this settlement from any attack of the country forces with much alacrity *as we were cautious of laying out much money until yr. Honours signified yr. approbation of that work* which shall now be set about in as expeditious a manner as the season of the year will permit our carrying it into execution. Here we must remark that the Go

¹ The Council of Madras. H. E. B.

² See *Long's Selections* No. 166.

³ Perhaps it would have been wiser if they had shown some "diffidence" now after having for so long neglected their defences, even in the face of repeated orders from home. The new Nawáb in the following year opened their eyes on this subject. However, to give the Fort William Government their due, they had consulted Watts, the chief at Cossimbazar, as to the prudence of seeking permission from the Murshidábád Government before they took their defences in hand. They were prepared to conciliate the Nawáb and to resort to the customary bribery to him and his ministers. Watts opposed the idea, chiefly because the Nawáb was really so rich that no bribe which Calcutta could afford would be likely to convert him if unfavorably inclined; he urged moreover that the precedent of asking and paying for such permission might prove a very embarrassing one in the future, and that if the Nawáb should refuse, the English would be worse off than ever. On the whole Watts advised them to go on with the fortifications and say nothing, and, if in the meantime exception should be taken by the Murshidábád Court, Watts was not without confidence that he could prevail upon the Minister "Hucknabog," for a consideration, to divert the possible anger of the Nawáb. Events did not justify this confidence. H. E. B.

vernment⁴ has not attempted to frustrate that design though it has a formidable appearance.

5. From President and Council, Bengal, to the Court of Directors, the 11th September 1755.

We shall pay due regard to yr. orders in regard to the fortifications Col. Scott projected for the defense of the place against a country enemy which are carrying on agreeable to his instructions, but not yet near finished. Mr. Wells who was recommended by the Colonel to overlook those works being dead, we have directed Mr. Barthlw. Plaisted to see them executed: for what may relate further to those works or any others that may be found necessary for the defense of the settlement we beg leave to refer yr. Hons. to the gentlemen you have entrusted on that head.⁵

6. From President and Council, Bengal, to the Court of Directors, the 8th December 1755.

Mr. Wm. Wells, 2nd Lieut. of the Train under whose inspection the works at Perrin's were carrying on, departed this life on 8th August. In his room Mr. B. Plaisted took charge of those works jointly with Mr. O'Hara. They have our directions to execute the plan Colonel Scott left behind him.

7. On August 4th, 1755, Captain Jasper Leigh Jones of the Artillery addresses a letter to the President and Council, Fort William, about the state of the defences of Calcutta.⁶

It is with pleasure I hear the Hon'ble Court of Directors have earnestly recommended unto you an inspection in general regarding the Buildings Military (*sic*) and Fortifications. * * * I think it is my duty to study anything for the good of the service. * * * [He enlarges on this duty theme and deprecates the circumstance that he is armed with so little authority to initiate or take up any measures for the defending of a place whose safe custody he considers himself responsible for in a great degree. He proposes to relieve his conscience by giving Government his opinion as to the condition of their so-called defences before he betakes himself to the Coast where he is next for duty. He then goes on to speak of Col. Scott's project.] In the

⁴ The Government of Murshidábád. H. E. B.

⁵ Probably Drake and Manningham, as those two only sign the letter to the Court of the 3rd September 1755. H. E. B.

⁶ "Bengal Consultations," 1755-56.

method I perceive the plan in regard to the inward works may by the order of the Hon'ble Ct. of Ds. be put into execution, but as there is no positive order to go to work on that, it is necessary now we should think for the good of the place we are entrusted with as well as the property of our proprietors and our Hon'ble Masters who employ us. [As there is a probability of a French war in Europe, he counsels that provision for that contingency should be the chief object in view : he considers that there is little or nothing to fear from a 'country enemy' as 'their interest for our continuation will be sufficient']. Provided a general war which is what we have to expect, it is natural to expect the enemy will attack this place, and in order to do this send some ships of war into the river whose coming near the town must be carefully avoided. It is certain the Hon'ble Ct. of Ds. has been always of opinion that if ever Calcutta was attacked it must be by some means from the river, and they, like prudent, experienced and good Masters, have provided their servants in time with the best guns they could procure which by their nature are for defense and not for sale, lying on the warfe numounted from their landing to this day.

* How far we have regarded their hint I can't say, as we have neither a carriage to mount any of them on, or even a gun already mounted in the garrison fit for service, and am very sorry I must be obliged to confess we seem to look more like a ruined and deserted Moor's fort than any place in possession of Europeans, much less a principal Settlement [There is more to the same purpose; his main recommendation is to repair the 'Line Wall' on the river bank, the immediate construction of fascines there as a temporary measure, the providing of vessels to be used as fire ships, and the manning of the batteries proposed by the gentlemen of the Militia Corps with trained Artillerymen intermixed with them]. What guns could be mounted on the 2 bastions by the river side ought likewise to be kept in good order with their platform and embrazures repaired, as they would be of infinite use, being so much higher than the guns of the Line Warfe Wall.

8. Captain Jones returns to the subject again on 11th Sept. 1755.⁷

Having not met with the pleasure of yr. approval in regard to my last letter to which this plan is in some measure a reference, and that it may not be misconstrued by yr. Honors, I hope you will be kind enough to give me leave to send it home, in the packet, for fear it might be thought (without an explanation) I had some views of converting the

⁷ "Bengal Consultations," 1755-56.

designs of a more perfect hand—this I hope will show I had no sinister views of my own⁸

9 It appears from the Consultations of 24th November 1755, that
 Plaisted also furnished to Mr Franklin “a plan he had taken of the town of Calcutta”

10 On 25th February, 1756, a letter was addressed to Drake and
 Colin Simson by Manningham⁹ by Colin Simson who thus introduces his own plan¹⁰

Since the time I have had the honor to be appointed Engineer I have had an opportunity to examine the plan projected by Col Scott for a fortification where Fort Wm now stands, which appearing to be deficient in some of the things principally requisite in a fortification, I thought it my duty to represent the same to yr Honrs that if you think proper the representation with the accompanying plan may be transmitted to the Ct of Ds

[He proceeds to criticise adversely Scott's plan in many particulars.] The whole Fort when finished will be a narrow ship on the side of the River, and in order to build it, the whole north side of the Factory which contains the apartments for most of the young gentlemen in the Company's service the magazine for arms and military stores, shop for medicine, smith's shop, &c, must be pulled down immediately, as also

⁸ This plan was said to be sent to the Honnble Company in the box of books per *Hebe*. After Captain Jones, *R. D. J.* and his brethren did not like to be hustled by this plan spoken and honest in his gloomy forebodings—(so soon to be realized) but from a quarter which even he did not foresee—were most unwelcome. Like the daughter of Priam he possessed the gift of prophecy which enabled him to intuitively see & feel nothing but darkness in his plans. On the 15th August Captain Jasper Jones sent in a letter to the Board with his sentiments on the present fortifications of the place and what he thought necessary in case of an invasion of war. The Board being of opinion it was irregular improper and unnecessary we ordered our Secretary to inform him that our orders had been issued to his Superior Officer to whom he should have applied if he had anything material to offer. Poor Jones did not go to the coast as he proposed he did not sail on the 22nd November 1755 having been overtaken with monotonous punctuality by the “violent fever” which had already accounted for so many of those who dealt with the defects of the settlement. The Bengal recording angels said grandiloquently, in their letter to the Court of Directors, that he “died,” and thus they announced without the hollow customary formality of any expression of regret. Captain Witherington resigned in his stead, and Lieutenant Grant became a Captain. H. L. B.

⁹ The special Committee on fortifications presumably H. E. B.

¹⁰ Letters from Bengal 1756

PLATE VII.

AN OF
T WILLIAM

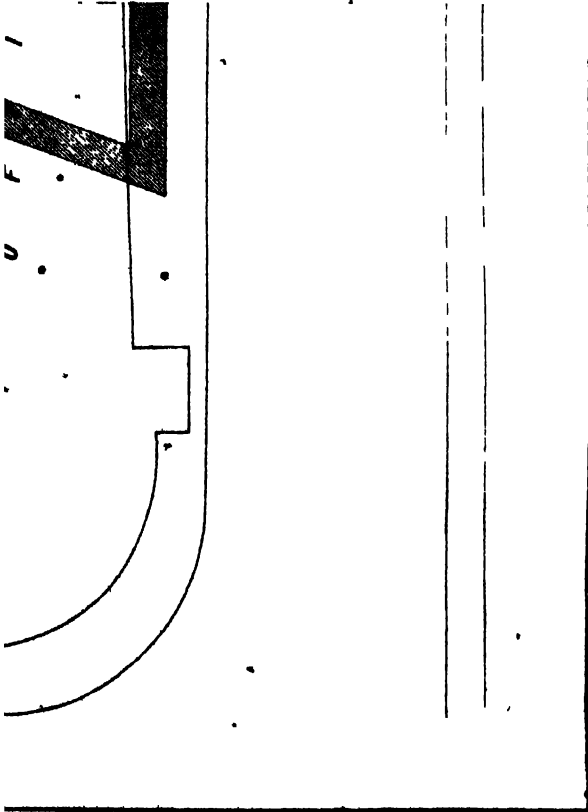


Photo. S. I. O., Calcutta

the Church and Hospital; all these buildings are in constant use, they cannot be well spared, and it would be difficult to supply their place immediately.¹¹ [He repeats this drawback to Scott's plan in another part.] Before the building of the Colonel's plan can be carried on there must be pulled down immediately all the north side of the Factory, the Church, Hospital, godowns of Mr. McGuire's house, the Dockyard, and godowns of the Company's house. Whereas in order to go on with building the Square nothing need be pulled down but the outhouses of the Company's House and a small part of north-east corner of present Fort.

Simson's suggestion was 'to save most of these buildings and to erect a square fort (as by the accompanying plan) which runs from the north side of the present fort round the Church through the Tank towards the horse's Stables and thence down to the waterside between Mr. Amiot's house and that of the Company.'¹²

There is only one allusion to be found in Simson's letter to the Fort river-bastions. 'The gun wharf or low battery on the river side which is not flanked by any fire from the Fort is proposed to be left in its present situation, and as its wall projects forward from the angle of the north-western bastion towards the river, it prevents the face of that bastion from being flanked. Neither is the face of the south western bastion towards the river flanked, the line of its face running without side the opposite flank.'

I may now pass on to describe Wells's plan of the fort to which frequent allusion has been made in the foregoing extracts and of which I give a facsimile (Plate VI). The plan is preserved in the British Museum having found its way there from the King's library. It is endorsed "No. 11 Duplicate Plan of Fort William and part of Calcutta by Wm. Wells under Col. Scott drawn in 1753"; and again in another part.—"Received per Dunington, 10th October 1754." The object of the plan is to show the new fort which Col. Scott projected in 1753, but it incidentally shows the old fort in considerable detail, the scale being 100 ft. = 1 in. Looking at the plan we recognise at once the irregular tetragon with its four bastions, (α , β , γ , δ ,) each having embrasures for ten guns. The north curtain here measures 210 ft., the south curtain 356 ft., the east 546, the west 560. The fort has three gates, ϵ the east gate, ζ the main south river

¹¹ See Long's *Selections* No. 165. By an unfortunate misprint, "north side of the Factory" has been converted into "south side" in the *Selections*.

¹² Then the Company's Stables were beyond, i. e., east of, the Hospital, and Amiot's house was just south of Douglas'. H. E. B.

gate, and η the smaller north river gate through which Suraj-ud-daula entered the fort. θ is the mound of the great flag-staff, ι is the passage joining the northern and southern divisions of the fort. $\kappa\lambda\mu\nu\pi$ are the series of rooms south of the east gate, of which the southernmost should be the Black Hole. ξ is the staircase to the south-east bastion α . ρ is the verandah in front of the chambers $\kappa\lambda\mu\nu\pi$. σ is the landing stage on which was placed the Company's crane. τ is the river wall armed with cannon and protected where necessary with palisades shown as dotted lines. Within the fort is a large central block of buildings marked in the plan as "The Factory." Hamilton calls this the Governor's House, and I prefer to use this name to indicate it, as "the factory" is more commonly used to denote the whole fort. At the same time it must be remembered that the Governor did not live here in 1753, but in the Company's House on the south side of the fort, although he still retained some rooms or offices in the south-east wing of the building for his own use. Adjoining the south-east bastion, we see the Export and Import Warehouses which, as Orme tells us, were added in 1747. Holwell speaks of them as the new, or colta, warehouses. The roofs was strong enough to carry cannon, and the south-east corner of the warehouses when thus armed seems to have been dignified with the title of the new S. E. bastion.¹³ The east gate (ϵ) was also armed with five cannon. The warehouse yard is separated from another yard to the west of it by a small zigzag wall. This yard (ω) was, I conjecture, the carpenter's yard, since it is next to the warehouses, and is conveniently situated with reference to the river. As regards the buildings on the north side of the fort, mentioned in Simson's letter of 25th February, 1756, I conjecture that $\phi\phi$ are the lodgings occupied by the young gentlemen in the Company's service, and that χ , the central building in the north division of the fort, is the armoury. The former conjecture is supported by the very nature of the ground plan of the buildings, the latter by the fact that when Mr. R. R. Bayne uncovered the foundations of χ in 1883 he found close by it pieces vitrified as if from a forge. The laboratory was situated in the east curtain¹⁴ and must have been one of the rooms $\psi\psi$. Generally the

¹³ Holwell alludes to the new S. E. bastion several times in his long letter to the Court of Directors. In section 40 he says: "That [outpost] to the eastward at the Court House you will find commanded by the battery over the E. Gate and from the old and new South-east bastions within musket shot." And again: "The whole square between the south face of the fort and the hospital, and gate of the burying ground was commanded not only by the New South-east bastion, but by seven 4-pounders on the new godowns." In section 48 he says: "Accordingly prepared with the flag [of truce] on the original S.-E. bastion where Captain Buchanan was then posted."

¹⁴ I learn this fact from Dr. Buseed who has furnished me with the following

plan has every mark of care and accuracy, and, as regards the northern portion of the fort agrees fairly well with what Mr. Bayne discovered in 1883. There is only one suspicious circumstance to be noted here. The north and south alignment of the Governor's House is not parallel to the east curtain. This is *prima facie* an improbable arrangement.

In the year 1891, all the buildings between the General Post Office and the Custom House were pulled down and the ground dug up for the purpose of laying the foundations of the new Government Offices, Dalhousie Square. As before in 1883, so now, the excavations revealed remains of the strangely fashioned walls of thin brick work which had once formed part of the old fort. In particular the curiosity of the public was much excited by the discovery of a small rectangular chamber faced with hard cement standing in the midst of four larger walls which looked down grimly on it.

At the beginning of September 1891, having made myself acquainted with the main features of the old fort, I went down to see the excavations. Almost the first thing I did was to measure the small rectangular chamber and the space between the larger walls which surrounded it. The small chamber measured east and west 9 ft. 9 in.; the distance between the thick walls east and west was 14 ft. 10 in. These measurements and the general appearance of the walls convinced me that the thick wall on the east was the curtain wall of the fort, that the wall on the west was the wall parallel to the curtain built for the purpose of containing the chambers running along that side of the fort, and that the smaller plastered chamber was a strong-room or godown.

I next identified the remains of the east gate. The walls had been much cut away by the excavations, but enough remained to show their true nature. Moreover, on measuring the distance from the spot where these walls stood to the record plate marking the north-east angle of the fort as determined by Mr. Bayne, I found that it agreed fairly well with the measurements given in the plan.

This discovery of the true position of the east gate was most important, because it settled finally one of the chief disputed points in the topography of the old fort, and it at once became the starting point for further investigations and discoveries. The value and significance of the excavations now became clear to me. If this was the east gate then the

extract from a letter written by Holwell to Bombay, 17th July 1756, when just released from "Muradabad." "The 20th in the morning the enemy formed three assaults at once, against the N.-W. bastion, against the N.-W. Futtoch or barrier, and against the windows of the Laboratory on the eastern curtain, and attempted to scale the North-West window."

mutilated fragments of brick work I had just been touching and measuring were all that remained of the well-known court of guard, barracks and Black Hole, spoken of by Orme and Holwell. West of them was the parade ground where the soldiers of Suráj-ud-daula had been drawn up to keep guard over their captives, and west of this again I should find the foundations of the Governor's House in the Fort. On advancing westward to a distance of about 110 ft. from the east curtain, the walls of the south-east wing of the Governor's House were readily discovered; and after a certain amount of careful excavation its leading features were all ascertained. Meanwhile I was anxiously trying to fix the position of the south curtain wall and the three lines of arches shown in the plan running parallel to the south curtain. The tradition has always been that the old arcade in the yard of the General Post Office was part of the old fort, and although Mr. Bayne had argued that this could not be the case, I felt convinced that tradition was right. I was, however, for a long time baffled in my efforts to prove the truth of the tradition owing to the fact that the actual distances between the lines of the arches of the arcade and the corner of the north-east wing of the factory, which had been discovered, could not be made to agree with the distances shown in the plan between that corner and the lines of arches along the south curtain. It was only after a good deal of excavation that the true position of the south curtain was established, and it became evident that the south face of the old arcade is part of the first line of arches within the curtain, that the pillars in the centre of the arcade belong to the second line of arches, and the north side of the arcade is on the alignment of the third and innermost line of arches.

The settling of this difficulty necessarily led to a further set of investigations. If these were the real positions of the south curtain wall and of the lines of arches within it, it followed that the plan was inaccurate in its representation of this part of the fort. Hence doubts naturally arose as to whether the plan was correct when it represented the east curtain wall as inclined at an angle to the north and south alignment of the Governor's House. It could not but seem more likely that they were parallel. To determine this point, excavations were made in the yard of the Custom House, and by this means the main outlines of the north-east wing of the factory and also the north and south alignment of the main building were ascertained. Here too it turned out that the plan was incorrect.

From this point the work of excavation was comparatively easy. Further investigations cleared up all that was obscure about the south curtain wall, and fixed the position of the block of buildings running east and west dividing the fort into two sections.

The plan given in Pl. VII gives the combined results of the excavations made in 1883 and in 1891. It shows the existing buildings on the site and over them the old fort is drawn. The walls of the darkest tint are the walls discovered by me, those of a lighter tint are walls discovered by Mr. R. R. Bayne. The still lighter tint indicates walls whose position has not yet been verified. In indexing the plan for reference I have tried to follow a uniform system.

I shall now describe the different portions of the fort which have been discovered in 1891, and I shall begin with

The Governor's House in the Fort.

"The Factory" or "the Governor's House in the fort," which Hamilton describes is "the best and most regular piece of architecture that I ever saw in India." I have dug up as much of the foundations of this "Piece of Architecture" as was possible without disturbing the existing buildings. I think it merits Hamilton's praise. The walls were undoubtedly strong and well-built, the shape of the building is regular and suggests the quadrangle of a college. The main building (OPQWV) faced the river. Its length north and south was 245 ft.¹⁶ In the centre of this face was the great gate of the Governor's House, and from it a colonnade ran down to the south water gate of the fort and the principal landing stage. This was the way by which Governor Drake escaped to the ships in 1756. Entering this gate and turning to your left you ascended the great flight of stairs which led, I conjecture, to the hall and the principal rooms. At right angles to the main building, and at each end of it, were wings running back towards the east curtain. Thus these north-east and south-east wings, together with the main building formed three sides of a rectangle having a raised cloister or piazza running all along the three sides. In the centre, I imagine, was a green grass plat. The south-east wing contained the apartments of the governor, and the factors probably had rooms in different parts of the building. Almost the whole of the ground on which the main building stood is at present occupied with government godowns. A trench was, however, dug from east to west in the passage between the opium godowns and the import godowns, and this enabled me to determine the positions of the principal walls, which were uncovered at the places marked $p p_1 p_2$. The wall $p p_1$ is one of the cross walls of the Governor's House forming the north side of the grand staircase. It is three feet thick. At p it meets the west wall of the Governor's House which is 3 ft. 9 in. thick, at p_1 it meets the east wall of the principal building (PV) which is 4 ft. 6 in. thick. The internal distance between these two walls is 30 ft. 9 in. At p' the cross wall $p p_1$

¹⁶ There are at least two or three views given in old prints of the west face of this building.

meets on its south side an inner wall 3 ft. thick, parallel to the main west wall of the building, and at p'_1 , it meets a similar wall 3 ft. 9 in. thick. The internal distance between the main west wall and the inner parallel wall at p' is 10 ft. 3 in.; the internal distance between the inner wall at p' and the next one at p'_1 is only 6 ft. 9 in. These inner walls doubtless served to support the grand staircase. The inner wall at p'_1 intersects the cross wall $p p_1$ and continues on the north side of it. I do not know the reason of this. The wall $O_2 p_2 R_2$ is the wall which supported the columns of the cloister, or verandah, which ran round the inside of the quadrangle of the Governor's House. It has been uncovered from p_2 to R_2 where it turns to run along the inside of the north-east wing. The wall $O_2 p_2 R_2$ is 2 ft. 6 in. thick, with an offset of 6 in. at the points where it actually supported the pillars of the cloister. The distance between the pillars of the west cloister, from centre to centre, was 10 ft. 6 in. At p_3 , 4 ft. 6 in. from p_2 , I found a piece of a small wall 1 ft. 6 in. thick. This wall contained the raised terrace on which the cloister stood. There is also at p_2 a wall $p_2 p'_2$ which bonds with the wall $R_2 p_2 O_2$, and which runs back towards, but does not meet, the east wall of the main building PV . The purpose served by this wall $p_2 p'_2$ is not clear.

Excavations were also made to find the north-west corner of the factory (W), and the north-east wing ($SE R_2 S_2$). The north-west corner (W) was readily found. The walls here are 3 ft. 6 in. thick. From W the north wall of the factory continues in a straight line for a distance of 50 ft. 3 in., outside measurement, to V . Here it is set back 3 ft. 6 in. From this point (U) the wall again runs on in a straight line for a distance of 18 ft. to T , where it is set back 4 ft. 9 in. ($TR=4$ ft. 9 in.), and thence continues as the north wall of the north-east wing ($RSS_2 R_2$). The wall $WVURS$ is throughout 3 ft. 6 in. thick. V , the point where this wall is first set back, is the north-east corner of the main building, where the wall WV meets the wall VP . The second set-back occurs at the point where the wall UT meets the wall TRR_1 , which runs parallel to VP and forms the east wall of the staircase on this side of the building. The wall TRR is 3 ft. 6 in. thick and 36 ft. long. Wells's plan shows a kind of projection or porch $VV'T'T$ against the wall UT , but of this I found no trace.

RS the main north wall of the north-east wing is 3 ft. 6 in. thick and 61 ft. long. Parallel to it and of the same length are the walls $R_1 S_1$, $R_2 S_2$. $R_1 S_1$ is the inner wall containing the apartments in the north-east wing of the Governor's House. It is 3 ft. 6 in. thick, and is distant 21 ft. 9 in., internal measurement, from RS . The remains of SS_1 , the east wall of this wing, are completely buried beneath the Custom House. The smaller walls rr_1 (two feet thick) qq_1 , ss_1 , (each

2 ft. 9 in. thick) divide off the space between BS and R, S_1 . The internal distance between SS_1 and ss_1 is 13 ft. 6 in.; between ss_1 and qq_1 it is 16 ft. 3 in.; between qq_1 and rr_1 it is 13 ft. 6 in.; between rr_1 and RR_1 it is 6 ft. R, S_1 is the foundation wall carrying the arches of the north cloister. It is 41 ft. distant, internal measurement, from BS .¹⁶ Where it directly supported the pillars of the cloister it is 4 ft. 6 in. thick, elsewhere it is 3 ft. 6 in. thick.

Other excavations were made on the site of the south-east wing of the factory (LL_2, O, O), in which the governor's apartments were situated, and considerable remains of its walls were discovered. The east wall of this wing LL_1, L_2 was traced out, as also portions of the south main wall of the wing LO , the inner wall containing the apartments L_1, O_1 , and the wall carrying the pillars of the south cloister L_2, L_3 . These walls are all 4 ft. thick. The distance of L_1, O_1 from LO is 17 ft. 6 in. and that of L_2, O_2 from L_1, O_1 is 35 ft. At the corner of this wing 17 ft. 6 in. south of L stood an isolated pillar 3 ft. square, L' . There is also a projecting chamber $MNN'M'$ built out against the main wall LO , the walls of which are 3 ft. thick, LM measures 11 ft. 6 in. The chamber $MNN'M'$ measures inside 18 ft. by 23 ft. The distance of L from the east curtain wall is 146 ft., that of S from the east curtain is 143 ft.: thus the north and south alignment of the Governor's House is very nearly parallel to the east curtain.

I now pass on to speak of the south curtain wall and the arcades

The South Curtain Wall.

built within it. This side of the fort was in all probability used for storing the Company's goods. As originally constructed it had only two parallel lines of arches built along the inside of the curtain forming a double arcade and beyond these arcades, (i. e., on their north side) was an uncovered raised terrace 22 ft. broad. Afterwards a portion of this raised platform was covered in by a third arcade. It also seems to have been found necessary to strengthen the south curtain wall by building another wall against it to support it. Lastly, in 1741, export and import wall houses were built on outside the south curtain. Evidently this side of the fort was subject to a good deal of alteration, and for this reason, or it may be from a desire to make the fort appear more symmetrical than it really was, Wells's plan comes far short of its usual accuracy. I have, accordingly, had some difficulty in determining the topography of this side of the fort, but my doubts have all yielded to patient excavation. The key to their solution was the discovery of the third or innermost of the lines of arches parallel to the south curtain.

¹⁶ This seems a little doubtful. The walls were very thick here, with a footing.

After making a careful search in every likely direction where I might expect to come across them, I find that the third line of these arches was built on the alignment of what is now the north face of the waggon shed in the Post Office yard. The foundations of this wall (D_3E_3) have been exposed. It is 2 ft. 6 in. thick and is built against another smaller wall 10 in. thick which is in contact with it, all along its south side but does not bond with it. There can be no doubt about the meaning of this. The smaller wall contained a raised terrace or platform in front of the arcades D_1F_1 , D_2F_2 . This platform was at first left open, but was afterwards covered in by an arcade, and a thick wall was built against the thin wall containing the platform to support the arches of the new arcade. Clearly then this wall D_3E_3 is the foundation wall of the third row of arches parallel to the south curtain. If this be so there can be no doubt about the situation of the curtain and the two other parallel lines of arches, of which in fact portions still remain standing. In the yard of the General Post Office there is an old arcade and arches which at its west end joins on to a very old house. This old house has been lately used as the store-godown of the Post Office, and the arches serve for a shed to keep the Post Office waggons in. The north side of the waggon-shed e_3i_3 is a modern wall constructed on the alignment of the third arcade wall of the old fort D_3E_3 ; but the two lines of arches e_1i_1 , e_2i_2 (of which the first e_1i_1 forms the south face of the shed, and the second e_2i_2 runs down its centre) are manifestly portions of the first and second lines of arches D_1F_1 , D_2F_2 , which ran parallel to the south curtain of the old fort. This agrees with the traditions of the spot and has been proved by my excavations. The arcade e_1i_1 i_2e_2 is a fragment. At its west end I find that four more of its pillars, i_3i_4 F_1F_2 , are built into the old Post Office godown; and on opening up the ground to the east of the arcade I found that the line of arches e_3i_3 has a foundation wall which runs on eastward underground as $e_3e'_3$, and that the line of arches e_1i_1 rests on isolated brick piers which are also continued eastward, and one of which I was able to expose e'_1 .¹⁷ Moreover the arcade e_1i_1 i_2e_2 is a fragment of the old fort. It is built of the old thin bricks, the pillars are sunk deep below the present ground level. The foundation wall which carries the line of arches e_2i_2 is 3 ft. 4 in. thick. The production of this wall e_2i_2 is at a distance of 22 ft. 6 in. internal measurement from the wall D_3E_3 , which I have identified as the foundation wall of the third or innermost line of arches parallel to the south curtain. This is just the distance which Wells's plan shows between the third and the second lines of these

¹⁷ It is 3 ft. 7 in. square at the top, and 4 ft. 8 in. square at its base.

arches, and hence I consider that e_2i_2 is a segment of the second line of arches. The pillars of these arches are 13 ft. 8 in. distant from each other from centre to centre. For similar reasons I identify the line of arches $e_1f_1f'_1g'_1i_1$ as segment of the first of the lines of arches within the south curtain. The line of arches e_1f_1 is 19 ft. distant from the line of arches e_2f_2 , by internal measurement. From e_1 to f_1 , a distance of 42 ft. 9 in., it runs straight on parallel to e_2f_2 . Then the whole line of arches is brought out 4 ft. 10 in. further south ($f_1f'_1$). Then again it continues to run parallel to the wall e_2i_2 for 82 ft. 10 in. ($f'_1g'_1$) after which it returns to its old alignment (g'_1i_1). Both as regards its distance from the wall e_2i_2 , which I have argued is the second line of arches parallel to the curtain, and as regards the irregularity of its conformation, the line of arches $e_1f_1f'_1g'_1i_1$ corresponds to the representation given in Wells's plan of the first line of arches within the south curtain, and I think there can be no doubt that it is a segment of that line of arches. Near the south-west corner of the old waggon shed a wall ik about 9 ft. thick projects in front of and parallel to the arches; another portion of it is hidden away in the old Post Office Store Godown. This is all that actually remains of the south curtain, but by opening up the ground in the yard of the Post Office I have been able to trace out its position and foundations. The original curtain wall was 3 ft. 2 in. thick. Within it, *i. e.*, on its north side, there was built another wall which was intended to support and strengthen the curtain wall. This wall is irregularly constructed and varies in thickness. At first it is about 3 ft. 8 in. thick with a space of 6 in. left in some places between it and the curtain wall. At f it ends in a buttress about 2 ft. 4 in. thick. The south curtain wall is met on its south face by a wall about 2 ft. 2 in. broad, at a point h , 53 ft. distant from k where the curtain is now cut away. The 2 ft. 2 in. wall runs southwards and a little to the eastwards, for a distance of 24 ft. Then it turns off eastwards. This wall is the wall shown in Wells's plan dividing the warehouses from the yard ω . Its discovery in the position indicated for it in Wells's plan places the identification of the south curtain wall beyond dispute.

I have already pointed out one serious inaccuracy in Wells's plan. He makes the east curtain inclined at an angle to the north and south alignment of the Governor's House in the Fort, whereas they really are parallel to each other. I have now to call attention to another serious inaccuracy in Wells's plan. I have shown that D_3E_3 is the northernmost of the three lines of arches built inside the south curtain wall. Its distance from the centre of the east gate is 162 ft. whereas Wells makes it only 150 ft.

As regards the north side of the fort, I have not much to add to what Mr. Bayne discovered in 1883. I have, however, verified by excavation the position of the range of rooms which divided the fort into two, and which, I believe, to have been the 'Writers' Buildings' in the old fort. The south wall of these buildings, JG , is about 60 ft. distant from W , the north-west corner of the Governor's House. At J , 99 ft. from the west curtain wall, there is a passage through the block of buildings 15 ft. wide. The wall JG is 3 ft. 2 in. broad,¹⁸ north of it, and parallel to it, at a distance of 19 ft. internal measurement, is a wall J_1j_2 . I also found a cross wall j_2j_3 to the west of JJ_1 and distant from it 24 ft. internally. These cross walls JJ_1 , and j_2j_3 , are 2 ft. 1 in. thick, J_1j_2 is 2 ft. thick. East of the passage we have no continuous wall corresponding with JG , but we find instead the bases of a row of columns YZ . These bases are 11 ft. apart from centre to centre, and measure about 3 ft. by 2 ft. each. At a distance of 9 ft. internally from the row of columns and parallel to it, is an inner wall Y_1Z_1 , 2 ft. thick. The wall Y_1Z_1 is 2 ft. 8 in. thick. I have not thought it necessary to trace out the walls YZ , Y_1Z_1 , along their whole length. I have merely exposed Z_1 , the termination of the wall Y_1Z_1 , where it meets the wall Z_1Z . The south face of the wall Y_1Z_1 is here 22 ft. 6 in. distant from the wall of the present Custom House. Z_1 is also about 190 ft. from the centre of the east gate of the fort, and 30 ft. from the east curtain wall by internal measurement. The whole length of wall Y_1Z_1 internally is 174 ft. 6 in. The breadth of Y_1Z_1 and Z_1Z is 2 ft. All these walls are of poor construction. The buildings here were, in fact, low, one-storied structures, as is evident from the old views of the fort. This also agrees with the supposition that they were inhabited by the writers, for we gather from the records¹⁹ that their lodgings were very damp and unhealthy.

As regards the west curtain I have little to say. Its alignment was determined by Mr. Bayne. I have verified the west curtain. it by excavation at three different spots X_1 , X_2 , X_3 . At X_1 near the south-west bastion of the fort, the curtain wall is unusually thick and measures 6 ft. This is probably due to the same cause which led to the strengthening of the south curtain wall in this direction.

¹⁸ I have not been able to trace this wall westwards from J for more than about 40 ft. At this point the remains became very confusing. I could only find a small wall 1 ft. 10 in. broad which met the thicker 3 ft. 2 in. wall on its northern face, and which I traced westwards up to the west curtain.

¹⁹ See a letter from the Court of Directors, February 11th, 1756, para. 69, in *Long's Selections*.

It now remains for me to speak of the east side of the fort. The central line of the east gate is 427 ft. from the corner of the north-east bastion, the position of which was fixed by Mr. Bayne in 1883. The gate measures internally 20 ft. from north to south and 36 ft. from east to west. The east face measures externally 26 ft. 6 in. Its salient angles $B B' C'$, $B' C' C$ are angles of 120 degrees. The walls are 4 ft. thick. The south wall of the gate $C' C_1 C_2$ was pierced by a drain which was met at an angle by a second drain running north-east.

On each side of the east gate there ran a double row of arches $A_1 B_1$, $A_2 B_2$, and $C_1 D_1$, $C_2 D_2$, parallel to the east curtain wall AB , CD . The space between the curtain wall and the line of arches next to it (*i. e.* between AB and $A_1 B_1$ and between CD and $C_1 D_1$) was divided up by cross walls into chambers. The second row of arches $A_2 B_2$, $C_2 D_2$ supported the verandah or piazza which extended on each side of the gate before the ranges of chambers.

As regards the rooms to the north of the gate between the east curtain and the line of arches $A_1 B_1$, there is little to say. Wells's plan shows that the first cross wall occurred after the fifth arch. The arches thus cut off were left open to the verandah and formed the north court of guard. But the whole interest of these investigations centres in the topography of the range of rooms on the other side of the gate where were situated the court of guard, the barracks, and the Black Hole spoken of by Orme and Holwell. There is no doubt about the position of the curtain wall (CD) and the parallel lines of arches within it ($C_1 D_1$, $C_2 D_2$). They have been traced out from the east gate right up to the north face of the General Post Office. The curtain wall CD is 3 ft. 9 in. thick. The foundation wall which carried the first line of arches $C_1 D_1$ is 2 ft. 9 in. thick, that which carries the second line of arches $C_2 D_2$ is 2 ft. 3 in. thick. Between the curtain wall and the wall $C_1 D_1$ is a distance of 14 ft. 10 in. and between the curtain and $C_2 D_2$ a distance of 31 ft. 3 in. from inside to inside. The wall $C_2 D_2$ meets the wall $D_3 E_3$ at a distance of 162 ft. from the centre of the east gate. So far the topography of this part of the fort is perfectly clear.

There is, however, considerable difficulty in determining the positions of the cross walls which sub-divided the space between CD and $C_1 D_1$ into rooms. Here, as I noticed before, Wells's plan is quite inaccurate. It shortens the distance between the east gate and the south-east

The cross walls south of the gate.

bastion, and so vitiates its whole representation of this corner of the fort. In the case of the cross walls it is not easy to check the errors of the plan by actual excavation, for we cannot always expect to find trace of the cross walls which may have been very slightly constructed. As a matter of fact only two cross walls have been actually discovered by excavation. One of these dd_1 , was found by Mr. Bayne in 1883 and was again brought to light by me in 1891. This wall is 1 ft. 6 in. thick, and is 145 ft. 6 in. from the centre of the east gate. Mr. Bayne thought that this wall was the north wall of the Black Hole, I shall show that it is probably the south wall of the prison. The other cross wall (bb_1) is a much more solid wall than the wall just described (dd_1). It is 2 ft. thick and is at a distance of 100 ft from the centre of the gate.

The position of two other cross walls may be inferred in the following way. A little to the south of cross wall bb_1 there was a subterranean chamber or vault $b'b'_1c'e'_1$ which attracted much notice when it was first discovered. Internally this vault measured 19 ft. 3 in. north and south, by 9 ft. 9 in. east and west. It was 7 ft. 2 in. deep. Its walls were 1 ft. 6 in. thick and were covered with a hard coating of plaster. The floor over the vault was carried across by four beams, the holes where the ends of the beams rested being clearly visible. The west wall of the vault ($b'_1c'_1$) was built against the foundation wall of the first line of arches C_1D_1 . The north face of the north wall of the vault $b'b'_1$ was 3 ft. 3 in. distant from the south face of the cross wall bb_1 . The internal distance between the east wall of the vault ($b'e'$) and the curtain was 2 ft 3 in. In this part of the curtain wall (bc) an iron grating was found, built up inside the brick work of the wall just below the level of the floor. It seems to have served no special purpose. The south wall of the vault $c'e'_1$ was coated with plaster on both sides. Its north face was plastered down to the level of the floor of the vault. Its south face was plastered down to a foot below the level of the floor of the chambers along the east curtain. This would seem to show that wall $c'e'_1$ was continued up above the floor level so as to form a cross wall cc_1 dividing up the space between bb_1 and dd_1 , and, I believe, that this was so because there must surely have been a cross wall between bb_1 and dd_1 , and I do not see where else it could have been conveniently placed except above $c'e'_1$ as cc_1 . The north face of this wall will be distant 126 ft. from the centre of the east gate.

There is somewhat similar evidence for the existence of another cross wall aa_1 north of bb_1 . Inside the curtain wall (at ab) there was built another wall $a'a'_1$ 1 ft. 6 in. and 24 ft. long which was carried up to within a foot of the floor level of the range of chambers along the

east curtain. This wall and the north face of the wall bb_1 were plastered to a depth of about 7 ft. below the floor level almost to the foundation of the walls. This seems to show that there was another vault immediately north of the wall bb_1 , and that the wall $a'a'_1$ carried the flooring of the room above. As the wall $a'a'_1$ is about 24 ft. long, I infer that this was the length of the vault and also of the room above it and, I think, that at 24 ft. north of bb_1 there was another cross wall like bb_1 which below the floor level served as the north wall of a vault and above the floor level was a cross wall sub-dividing the space between the curtain and C_1D_1 .

In this way I have been able to prove by excavation the existence of four cross walls aa_1 , bb_1 , cc_2 , dd_1 . But this is not enough. It is still necessary to consider whether, as Wells's plan implies, there were any other walls besides these four, and in particular whether there were any to the south of dd_1 . For the Black Hole was the southernmost of the rooms built along this part of the east curtain. Consequently its site must be immediately to the north of the last cross wall, and its site is known if the position of the southernmost cross wall is known. I have accordingly traced out the wall C_1D_1 , which contained the chambers built against this part of the east curtain, to a point d'_1 , 166 ft. from the centre of the east gate, where this containing wall stops. Beyond d'_1 there is only a small thin wall, built, I suppose, to contain a pavement. There could have been no cross walls beyond d'_1 , and I have found no trace of any between d_1 and d'_1 . It therefore follows that dd_1 is the southernmost cross wall. I have also traced out the east verandah wall C_2D_3 to D_3 , 166 ft. from the centre of the east gate, where C_2D_3 meets the wall D_3E_3 which carried the third or innermost line of arches on the south side of the fort. Thus my excavations prove that dd_1 is the southernmost cross wall, and that it occurred at about 20 ft. north of the end of the containing wall C_1D_1 , and also at about the same distance north of the junction of the verandah wall C_2D_3 with the third line of arches on the south side D_3E_3 .

This also agrees on the whole with Wells's plan which represents the last cross wall as occurring about 16 ft.

Comparison of Wells's plan with the results of excavation.

or 18 ft. north of the end of the containing wall and of the junction between the east verandah wall and the inner line of arches on the south side of the fort. Wells's plan, however, does not exactly agree with the results obtained by excavation as to distances, but this is accounted for by the fact that the length of the curtain wall between the east gate and the south-east bastion is too short by about 12 feet. Whoever it was, who actually drew the plan, he did not discover his

mistake till he came to put in the details of the rooms along the east curtain south of the gate. Then, finding that there was not sufficient room to put those details in properly, he crowded them in together. This, I think, is clearly the case with the cross walls. The discrepancies between Wells's plan and the results obtained by actual excavation may be exhibited as follows:—

Wells's plan shows walls at	43, 70, 95, 108, 122, 135 ft.	} from the centre of the East gate.
Excavation shows walls at	75, 100, 126, 146 ft.	

Looking at this comparative table, and remembering that Wells's distances are short of the true distances, we easily discover which walls correspond. The first cross wall shown by excavation (aa_1) corresponds to the second wall given in Wells's plan. The second cross wall shown by excavation (bb_1) corresponds to the third wall in Wells's plan. The fourth cross wall shown by excavation (cc_1) corresponds to the fifth wall in Wells's plan; and the last wall in Wells's plan corresponds to the last wall shown by excavation. The two missing walls not shown by excavation are the first cross wall of Wells's plan, which was the south wall of the barracks (μ), and the fourth wall of Wells's plan which must have come between bb_1 and cc_1 . This wall could not have been a very substantial one, as it must have been built over the subterranean chamber $b'b'_1c'c'_1$. The room π in Wells's plan, which is the southernmost of the series of rooms built within this part of the east curtain, and is, therefore, the Black Hole, corresponds with the space cc_1dd_1 . This is the site of the Black Hole. As regards the staircase to the south-east bastion, I have unfortunately very little to say. This staircase is mentioned by Holwell and is shown by Wells in his plan. It is a long staircase. Its head is put by Wells at about 8 ft. from the south face of the southernmost cross wall, and its foot at a distance of about 50 ft. I have not been able to find any trace of it by excavation, but I see no reason for doubting its position to be correctly marked by Wells.

If I might be permitted to make a few conjectures I should arrange the rooms along the east curtain thus. The

**Arrangement of the
rooms along the east
curtain.**

whole range of rooms is contained between the south wall of the east gate CC_1C_2 and the cross wall dd_1 and between the east curtain CD and the first line of arches parallel in the curtain C_1D_1 . The pillars of these arches were about 8 ft. 9 in. distant from each other from centre to centre. West of them came a second parallel line of arches, C_2D_2 forming the piazza before the rooms. The first of the cross walls dividing off the rooms occurred after the fourth arch in the first line of arches C_1D_1 . Thus it would be about 35 ft. distant from the wall CC_1C_2 . These four arches were left quite open to the

piazza west of them, and formed the court of guard south of the gate. Three arches further on was another cross wall aa_1 . If this wall occurred exactly after the seventh of the first line of arches C_1D_1 and I am right in believing that these arches measured 8 ft. 9 in. from centre to centre, then the centre of the cross wall aa_1 would be 61 ft. 3 in. from the south face of the wall CC_1C_2 . If we rely on the evidence of the excavations its north face was 60 ft. 3 in. from the south face of CC_1C_2 . The next cross wall bb_1 occurred after the tenth arch. As shown by the excavations its north face was 86 ft. distant from the south face of the wall CC_1C_2 , or if we reckon its distance according to the arches, its centre will be 87 ft. 6 in. from CC_1C_2 . I have argued that another cross wall cc_1 was 126 ft. distant from the centre of the east gate, that is its north face is 112 ft. from the south face of CC_1C_2 ; and if we reckon that this wall came after the thirteenth arch its centre will be 113 ft. 9 in. from CC_1C_2 . The last cross wall dd_1 is 131 ft. 6 in. from CC_1C_2 , or if we reckon that it came after the fifteenth arch its centre would be about 131 ft. 3 in. distant. The room cut off by the walls cc_1 , dd_1 , is the Black Hole. It measured internally 18 ft. by 14 ft. 10 in. It was bounded on the east by the curtain, on the south by the wall dd_1 , on the north by the wall cc_1 , and on the west by the fourteenth and fifteenth arches of the first line of arches parallel to the east curtain C_1D_1 . These two arches were bricked up and only a window was left in the centre of each. Along the east wall of the Black Hole was a wooden platform about six feet broad and raised three or four feet from the ground, open underneath. It probably projected from the east wall as far as the door in the north wall cc_1 . This door opened inwards. The three rooms between the court of guard and the Black Hole were the barracks. They were bounded on the east by the curtain wall, along which ran a wooden platform similar to that in the Black Hole. The nine arches which bounded the barracks on the south, (*i. e.*, the fifth to the thirteenth arches inclusive) were partially closed by a dwarf wall, or, as Holwell calls it, a parapet wall. The rooms opened one into another and a door in the wall cc_1 led to the Black Hole. South of the Black Hole there were no more rooms, the remaining space being taken up by a straight staircase, fifty feet long, built against the east curtain wall, leading to the south-east bastion.

I believe that this arrangement of the rooms will satisfy all the requirements of Holwell's narrative. The barracks according to him would have been a fairly comfortable place for 146 persons to spend the night in. I make the whole area of the barracks to be 72 ft. by 14 ft. 10 in. This gives 7 sq. ft. 45 sq. in. for each individual. The area of

Black Hole is 18 ft. by 14 ft. 10 in. This allows just 267 sq. ft. of area for 146 persons, or less than 2 sq. ft. each.⁸⁰

The result of all this fresh discussion is to place the site of the Black Hole prison immediately to the north of the site fixed for it by Mr. Bayne, so that Mr. Bayne's conclusion was not so far wrong. Mr. Bayne, however, arrived at his conclusion from two utterly false premises. His first premise was that the south-east corner of the fort was just like the north-east corner. This was completely refuted by Mr. Munro in 1889 when he produced Wells's plan of the fort. Mr. Bayne's second premise was, that the dimensions of the fort stated by Orme in the text of his history and shown in the accompanying plan, were absolutely correct, and Mr. Bayne still held to this belief even though he discovered that there was an error somewhere in Orme's plan when he tried to superpose it upon Simms's Survey of Calcutta. The excavations which I have made prove that the dimensions given by Orme are only approximately correct, accurate enough for the purposes of his history, but not accurate enough for the purpose of settling minute points of topography. Fortunately for Mr. Bayne, the errors of his two premises counteracted each other, and thus, when he made an excavation in the passage north of the General Post Office, where he expected to find the Black Hole, he actually did come across one of its walls. But, like words, walls cannot be interpreted apart from their context. Mr. Bayne was prevented at the time from finding the right context, and he therefore failed to understand these walls; I have merely been more fortunate in my opportunities, and have been able to secure the right context.

Only a few more miscellaneous points as to the topography of the old fort remain to be mentioned. Besides the two drains already spoken of, which I found by the east gate, I also came across a piece of another old surface drain running along the west side of the verandah which extended before the chambers built inside the east curtain. This drain is 4 ft. wide at the top and 2 ft. at the bottom. Its eastern edge is 5 ft. distant internally from the verandah wall C_2D_2 . There is also an old well about 50 ft. east of the east wall of the Governor's House in the fort, and 23 ft. south of its central line, which may have been part of

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⁸⁰ The only cross wall shown in Wells's plan which I have not accounted for is the wall between the rooms ν and σ . If what I have said as to the other cross walls is correct, this cross wall should come between bb_1 and cc_1 . It could not then have been a substantial wall as it would have been built over the subterranean chamber $b'b_1, c'c_1$. Could this wall have been meant for the wall $b'b_1$?

the old building. The main walls of the buildings are brick in lime, the minor walls are brick in mud. The parade ground is paved with brick on edge over one flat, covered with six inches of concrete. Its level was visible everywhere in section. If we reckon the level of the curb stone of the footpath in Dalhousie Square as 100 ft. then the level of the parade ground would be 98·07 ft., i. e., a little less than 2 ft. lower down. The level of the floors of the rooms varied. The level of the floor over the subterranean vault was 99·24 ft. At about the middle of the set of rooms built along the east curtain it was 98·5 ft.

A Specimen of the Padumāwati.—By

G. A. GRIERSON, B.A., I.C.S.

The following is an attempt to give a correct text of a portion of the Padumāwati,¹ or Padmāvatī of Malik Muḥammad of Jāyas in Oudh. He flourished under Shēr Shah in the year 140 A. D., and numerous MSS. of his great poem are in existence.

The value of the Padumāwati consists chiefly in its age. Malik Muḥammad is, I believe, the oldest vernacular poet of Hindūstān of whom we have any uncontested remains. Chānd Bar'dāī was much older, but the genuineness of his Prithiraj Rāy'sū is denied by many competent scholars. Vidyāpati Thākur, who lived in the year 1400 A. D. has only left us a few songs which have come down to us through five centuries of oral transmission, and which now cannot be in the form in which they were written. The preservation of the Padumāwati is due mainly to the happy accident of Malik Muḥammad's religious reputation. Although profoundly affected by the teaching of Kabīr, and familiarly acquainted with Hindū lore, and with the Hindū Yōga philosophy, he was from the first revered as a saint by his Muḥammadan co-religionists.

He wrote his poem in what was evidently the actual vernacular of his time, tinged slightly with an admixture of a few Persian words and idioms due to his Musalmān predilections. It is also due to his religion that he originally wrote it in the Persian character, and hence

¹ The author himself invariably spells the word thus.

discarded all the favourite devices of paṇḍits, who tried to make their language correct by spelling (while they did not pronounce) vernacular words in the Sanskrit fashion. He had no temptation to do this. The Persian character did not lend itself to any such false antiquarianism. He spelled each word rigorously as it was pronounced. His work is hence a valuable witness to the actual condition of the vernacular language of Northern India in the 16th century. It is, so far as it goes, and with the exception of a few hints in Alberuni's *Indica*, the only trustworthy witness which we have. It is trustworthy, however, only to a certain extent, for it often merely gives the consonantal frame work of the words, the vowels, as is usual in Persian MSS., being generally omitted. Fortunately, the vowels can generally be inserted correctly with the help of a few Dēvanāgarī MSS. of the poem which are in my possession.

Besides its interest as a key to a philological puzzle, the *Padumāwati* also deserves notice for its contents. In itself it is a fine poetical work, and one of the few original ones, not dealing with either Rāma or Kṛishṇa, with which I am acquainted in any Indian language. It is also remarkable for the vein of tolerance which runs through it,—a tolerance in every way worthy of Kabir or of Tal'sī Dās. The story of the poem has been a favourite one with eastern authors. Husain Ghaznawī wrote a Persian poem on the subject, entitled *Qissae Padmāwat*. Rai Gōbind Munshī in 1652 A. D. wrote a version in Persian prose, called (after the chronogram of its date) *Tukfatul-Kulūb*. Again Mīr Ziyān'd-dīn 'Ibrat, and Ghulām 'Alī 'Ishrat wrote a joint version in Urdū verse in 1796 A. D. Malik Muḥammad's poem was written in 1540 A. D.

Concerning the author little is known. He tells us himself that he was the disciple of Sayyad Muḥīu'd-dīn. He studied Sanskrit Prosody and Rhetoric from Hindu Paṇḍits at Jāyas. He belonged to the *Chistiyyā Nizāmiyyā*, that is to say, he was the eleventh disciple in descent from the well-known Nizāmu'd-dīn, who died in 1325 A. D. Muḥīu'd-dīn's teacher was Shaikh Burhān, who resided at Kalpi in Bundēl'khāṇḍ, and who is said to have died at the age of a hundred years in A. D. 1562-63. The poet was patronized by Shēr Shāh.

The only other fact which we know for certain is that he was blind of one eye. I have collected the following traditions about him. One of Shēr Shāh's allies was Jagat Dēv, (enthroned 1527 A. D.; died 1573 A. D.), Mahārāj of Ghāzipur and Bhoj'pur. He was present at the battle of Bagh'sar (Buxar) in which Shēr Shāh defeated Humāyūn. Malik Muḥammad is said to have attended his court. Two of Malik Muḥammad's four friends, whom he mentions in his poem (22) were

also patronised by Jagat Dēv. These were Yūsaf Malik and Salōnē Singh (whom Malik Muḥammad calls Miṣṣ as if he was a Muḥalmān). It is said that another attendant at Jagat Dēv's court was a *Katthak*, named Gandharv Rāj, who was skilled in the art of singing. Malik Muḥammad was greatly attached to him and gave him his blessing, prophesying that skill in song would always remain in his family, and, at the same time, begging him to take, as a sign of affection, his title of Malik. Ever since, Gandharv Rāj's descendants have called themselves Malik, and members of the family still live in Tulūkā Raipurā and at Haldī in Baliyū District, and are renowned singers.

It is said that the Rājā of Amēṭhi was childless, but was granted a son, in consequence of the prayers of Malik Muḥammad. When the poet died, he was buried at Amēṭhi, and his tomb* is still shown, and worshipped by believers. Malik Muḥammad's two friends, Malik Yūsaf and Salōnē, died in what is now the district of Gōraḥ'pur, from a surfeit of mangoes. Malik Muḥammad was with them at the time, and himself narrowly escaped. The mangoes are said to have been infested by poisonous insects.

The text* of the Padumāwati, being in the 13th Hindī language, and written in the Persian character, is very difficult both to read and to understand. It has been frequently transliterated into the Nāgarī character, but the transcriptions, whether MS. or printed, are full of mistakes, generally guesses to make the meaning clear. The best transliterated edition is that by Paṇḍit Rām Jasan of Banāras; but even in his case (putting instances of sanskritization out of sight) hardly a line is correct. There are several printed editions in the Persian character, but they too are all incorrect. I have been fortunate enough to become possessed of several old MSS. of the poem in the Persian character, and by diligent comparison I have endeavoured to reproduce, in the Nāgarī character, the actual words written by the poet. A glance at the critical notes will show the labour involved in the task. I have also endeavoured to give a tentative translation of text as I went along.

To the text, I append an analysis of the whole poem, which may prove interesting. It must, however, be understood that I do not guarantee its entire correctness. There are many passages which I do not yet understand, and which await further examination. I hope, in process of time, to publish, jointly with Mahāmāhōpadhyāya Paṇḍit Sudhākara Dvivedī, F.A.U., a complete and satisfactory edition of the whole poem. Of that edition, the present specimens may be taken as a provisional sample, and I shall be most grateful for any suggestions which reach me in time to improve the larger work.

For the purposes of these specimens, I have used the following MSS.:—

A. MSS. in Persian character (marked collectively as P).

- (1) India Office Library, Pers. Cat. 1018. Dated 1107 Hij. = 1695 A. D. (Ia).
- (2) Ditto No. 1975. Vowel marks freely used. Correctly written. Dated 1109 Hij. = 1697 A. D. (Ib).
- (3) Ditto No. 1819. Vowel points inserted in red ink by a later hand. Dated 1114 Hij. = 1702 A. D. (Ic).
- (4) India Office Library, Urdu Catalogue, No. 3130. Few vowel points. In two different handwritings. No date, (Id).

All these Persian MSS. are very fairly correct. I have taken Ib. as the basis throughout.

B. MSS. in the Dēva Nāgarī character (marked collectively as N).

- (1) India Office Library, Sanskrit Catalogue, No. 247i. A magnificent copy, profusely illustrated. Written by Thānā Kāyath of Mirzāpur. No date. Spelling highly Sanskritized (Is).

I must here express my thanks to Dr. Rost, and the authorities of the India Office Library, for the loan of the above MSS.

- (2) A well written copy kindly lent me by Kavirāj Syāmal Dās, belonging to the library of the Muhārāj of Udaipur. Spelling not so Sanskritized. Dated Sambat 1895=1838 A. D. (U).

C. MS. in the Kaithī character.

- (1) A clearly written copy. With very irregular spelling: and many important variations in the readings. Written in Sambat 1812=1755 A. D. (K).

In editing the text I have adopted the following principles as regards spelling. Prākṛit words are spelt as in the Persian copies. When the Persian copies give vowels, those vowels are adopted. When no vowels are given, I have used my judgment in adopting the vowels given in the Dēvanāgarī and Kaithī copies.

On the other hand, for precisely similar reasons, I have generally adopted the spelling of Arabic and Persian words which is best vouched for by the Dēvanāgarī and Kaithī copies. Such words are phonetically spelt in that alphabet.

U and K uniformly write उ as क. I have not followed them in this. When U, as it frequently does, gives a short u as the final vowel of a Prākṛit substantive, I have generally adopted it, unless the use of the vowel is contradicted by the Persian copies.

The termination **न** *nh*, is capable of being read as equivalent to either the plural oblique termination **न्**, or to the singular oblique termination **न्** or **न्**. Unless the context showed that **न्** is required, I have transliterated it **न्**. Even in the best Persian MSS. the nasal is inserted so capriciously, that it is at least doubtful whether it should be used in the singular, and I have accordingly followed the best *Dēvanāgarī* MSS., in omitting it, in this case, throughout.

The metre of the poem consists of stanzas of seven *campūs* followed by a *dōhā*. In the latter, a *mātrā* is frequently omitted in the first half. In the *campūs*, accent is frequently used instead of quantity, a short accented syllable being treated as a long one, especially at the end of a line. Malik Muḥammad wrote long before Kṛṣṇa Dās laid down the canons of Hindi metre. Such accented short syllables I have marked, in transliteration with an acute accent, thus,—*nīramārē* (11, 3).

I regret that the scheme of transliteration into the Roman character is not that usually adopted in this *Journal*. For various reasons, which it is not necessary to give here, I have been compelled to adhere more closely to that used in the *Bihārī Dictionary* by Dr. Hoernle and myself.

SCHEME OF TRANSLITERATION ADOPTED IN THIS PAPER:—

अ *a*, **आ** *ā*, **इ** *i*, **ई** *ī*, **उ** *u*, **ऊ** *ū*, **ए** *e*, **ऐ** *ē*, **ओ** *o*, **औ** *ō*. • —, thus **अँ** *ā̃*, **इँ** *ĩ*, **ईँ** *ī̃*, and so on. — *m*.

The following vowels occur only in a few Sanskrit words, **अ** *ri*, **ऐ** *ai*, **औ** *au*. In *Tadbhava* words **ऐ** and **औ** do not occur. **अर** is transliterated *ai* and **अउ** *au*. In *Nāgarī* MSS. when **ऐ** and **औ** occur they are plainly stenographic signs for **अर** and **अउ**. This is frequently shown by the metre. There is no danger of confusing **अर**, **अउ**, and **ऐ**, **औ**, for they appear in distinct classes of words, **अर**, **अउ**, are always in *Tadbhava* words, or in corrupted *Tatsama* words, **ऐ** and **औ** occur only in words lifted bodily from Sanskrit:—

क *k*, **ख** *kh*, **ग** *g*, **घ** *gh*, **ङ** *ṅ*.

च *c*, **छ** *ch*, **ज** *j*, **झ** *jh*, **ञ** *ñ*.

ट *t*, **ठ** *ṭh*, **ड** *d*, **ढ** *ḍh*, **ण** *ṇ*.

त *t*, **थ** *th*, **द** *d*, **ध** *dh*, **न** *n*.

प *p*, **फ** *ph*, **ब** *b*, **भ** *bh*, **म** *m*.

य *y*, **र** *r*, **ल** *l*, **व** *w*, (or in Sanskrit words *v*).

श *ś*, **स** *s*, **ह** *h*.

श् only occurs in Persian words, representing the Persian **ش**, or in pure Sanskrit words. In the former case it is transliterated *sh*, and in the latter by *ç*.

Arabic and Persian letters:

ث *ṭh*, **ح** *h*, **خ** *kh*, **ز** *z*, **ژ** *zh*, **ص** *s*, **ض** *z*, **ط** *t*, **ظ** *ṭh*, **ع** *gh*, **ف** *f*, **ق** *q*.

अथ असत्तुति खंड ॥ १ ॥

चोपार ।

सर्वरुं खादि एक करताह । जेर जिउ दीन्ह कीन्ह संसाह ॥
 कीन्हसि प्रथम जोति परगाह । कीन्हसि तेहि परबत कबिलाह ॥
 कीन्हसि अग्नि पवन जल खेहा । कीन्हसि बडतर रंग डरेहा ॥
 कीन्हसि धरती सरग पताह । कीन्हसि बरन बरन अउताह ॥
 कीन्हसि सपत दीप ब्रह्मंडा । कीन्हसि भुवन चउदह उ खंडा ॥
 कीन्हसि दिन दिनकर ससि राती । कीन्हसि नखत तराग्रन पाती ॥
 कीन्हसि सीउ धूप अउ बाह्रा । कीन्हसि मेघ बीज तेहि माह्रा ॥

दोहा

कीन्ह सबद अस जा कर दोसर बाज न काहि ।

पहिलर तेहि कर नाउं खेर कथा करउं अउगाहि ॥ १ ॥

Critical notes.

1. 2. *Kīnhesi*, so apparently Ib, which seems to vocalize the final *س*. The word may, however, be also read *kīnhisa* for *kīnhesa*. The other copies in the Persian character simply have *کینھس*, which may be read either *kīnhesi*, *kīnhasi*, or *kīnhasa*. Is and K have *kīnhegi* for *kīnhesi*. U has *kīnhasa*. Throughout the poem a short *e* is inserted to form the past tense. Thus, *dekhusi*, he sees, *dēkhesi*, he saw. Ia *tinahi prīti kabilāsū*, Ib *parabata kabilāsū*, Id *parabata kailāsū*, Is *tēhi prīti ka bilāsū*, U *tihi parabata ka bilāsū*. In the Persian character *پریت* and *پریت* and *کیلاسو* and *کبالسو* are easily confused. In each case it is a question of a dot. There can be no doubt about the form *kabilāsū* for *kailāsū* being right. The word is of frequent occurrence in the poem, and is invariably spelt thus in the best MSS. It is a curious corruption, and has puzzled all copyists with Sanskrit predilections. 3. Ib has *pavana agini*, K *agni pauna*, Is *bahutai*, UK *bahutē*, P give no clue. 4. Is *avātārū*.

5. Ia *kīnhesi sapata dīpa brahamaṇḍā*Ib „ „ *lōga* „Ic „ „ *sāta saraga* „Id „ (illogible) P *sāta prīta mahī bhaṇḍā*Is *kīnhesi sāta sata brahamaṇḍā* (sic)U *kīnhasa sāta saraga* „K *kīnhesi* „ *dīpa* „

Two printed editions follow Ia, except having *mahī* instead of *dīpa*. Ia is adopted as making the best sense. 6. Ib *duniara*, U *dinakara*, K *duniā*. Printed editions *dinēsa*. 7. Is *kīnhesi sāta ghāma*. 8. Id *kīnhasi saba asa*. Is *dasarahi*, U *dasarahu*. 9. Ia *tā kara nāu*, K *karatū kai nāu lei*, Ia *kathā kahaū*, Id *کجا*, Is *arigāhu*, printed editions and K *uragāhu*.

Translation.

(1). I bear in mind that one and only primal Maker, who gave life and made the world. First made He manifest the Light, then

made He (for the Light) the mighty mountain Kailāsa.¹ He made the fire, the air, the water, and the dust. He made forms² of varied hue. He made the Earth, and Heaven, and Hell; and he made incarnations in many persons.³ He made the mundane egg⁴ with its seven⁵ regions. He made the universe with its fourteen⁶ worlds. He made the sun for the day, and the moon for the night; He made the asterisms and the systems of the stars. He made coolness, sunshine and shade; He made the clouds and lightning (that abideth) in them.

All things are so made by Him, that naught is worthy to be compared with Him. First take I His name, and then in deep thought do I begin⁷ my story.

चौ ॥ कौन्हेसि सात उ समुँद अपारा । कौन्हेसि मेव सिखिंद प्रहारा ॥
 कौन्हेसि बदी नार उउ भरना । कौन्हेसि मगर मच्छ बड बरना ॥
 कौन्हेसि सीप मेति तेहि भरे । कौन्हेसि बडतर नग निरमरे ॥
 * कौन्हेसि बन-खंड उउ जरि खुरी । कौन्हेसि तरिवर नार खजूरौ ॥
 कौन्हेसि साउज बारन रचही । कौन्हेसि पंखि उडहिं जहँ चहही ॥
 कौन्हेसि हरन सेत उउ स्यामा । कौन्हेसि नौंद भूख बिसरामा ॥
 कौन्हेसि पान फूल रच-भोगू । कौन्हेसि बड उउखद बड रोगू ॥

¹ By 'Light,' the poet refers to Mahādēva, who dwells in Kailāsa. Indian Musalmāns frequently consider Adam, the first man, as the same as Mahādēva. The fact that the poet expressly says that Kailāsa was made 'for' the Light, shows that he cannot be referring to light, the first of created things.

² An Urdū gloss. translates *urēha* by نقش, design, stamp, drawing. I have noted it also in 48, 4; 506, 5, *asa mūrata fē dai urēhī*, and in 510, 8, *bhai urēha puhupa soba nāmā*. In the second the Urdū translation gives ظاهرکی and in the latter, the whole line is translated تویہ معلوم ہوتا تھا کہ رنگ بُرنگ پھول ہر قسم کے ہیں. The word is still used in Oudh and Bihār by women, in the sense of *racanā*. It is derived from the Skr. *ullēkha*.

³ Apparently, incarnations in many castes. Alluding to the doctrine that incarnations have occurred in all religions in many parts of the world. Or it may only refer to the various *avatārs* of Viṣṇu.

⁴ I. e., the universe, alluding to the well known tradition detailed in Manu.

⁵ Jambu, Plākṣa or Gōmēdaka, Ālmali, Kuṣa, Kramfika, Āka, and Puṣkara.

⁶ There are seven worlds (*lōka*) above, viz., Bhūr-lōka, Bhuvar-l., Svar-l., Mahar-l., Janar-l., Tapar-l., and Satya-l. or Brahma-l., and seven below, viz., A-tala, Vi-tala, Su-tala, Rasī-tala, Talā-tala, Mahā-tala, and Pātāla. According to Musalmāns, there are seven regions (طبق) above (these are heavens), and seven below (earth).

⁷ Two Urdū glosses translate *augāhi* by شروع, a meaning for which I can find no other authority. It means literally to plunge into water, hence to be immersed in anything, to have the mind fully occupied.

दो ॥ निमिष न खान करत सोहि सबहि कीन्ह पल एक ।

गगन चंतरिख राखा बाजु खंभ बिनु टेक ॥ १ ॥

2. 1. *Sāta-u*, so Ib, Ia U K have *hēma* (U reverses the order of the two hemistichs), Is *hīra*, Ic *sātō* with *hēma* as a v. 1. on margin. Id *sāta* (also Rām Jasan), Io P *bāwara*; كيهكند (Sanskrit किष्किन् for कुखण्ड) evidently puzzled the Nāgarī transcribers. Is has *khayḍa khayḍa*, U *kīnhana parabata mēru apārā*. The P copies are undecided between *khikhinda* and *khikhinḍa*. The former is probably the correct reading. 2. K *mācha*. 3. U *vahu bhār*, K *jehi bhālē, niramālē*. 5. U *rāhai, cāhai, N uḡai*. 7. U *phūla au*, Id K *aukhadhā*. 8. In *gagana antaricha*, Ic *gagana antarikha*, Ib *khābha*, U *lagai, rākhai*, K *nimikhi, karata tehi sabhai kīnha chana ēka*. Ias have *ohi*, Ibcd U *wahi*.

2. He made the seven¹ shoreless oceans, &c., and He made the mountains of Mēru and Kukhaṇḍa.² Rivers made He and streams and waterfalls; crocodiles and fish made He of many kinds. He made the oyster shell, and the pearl which filleth it, He made many flawless gems. Forests made He and roots³; tall trees made He, palmyras and date palms. He made the wild animals⁴ which dwell in the forest; He made the fowl which fly where they will. He made colours, white and black; He made sleep, and hunger, and rest. He made the betel-leaf and flowers, and the pleasures of taste; many medicines made He and many sicknesses.

He made them in less than the twinkling of an eye; all made He in a single instant. He fixed the Heavens in space without a pillar and without a prop.

सो ॥ कीन्हसि नानुस दोन्ह बजार । कीन्हसि अन्न भुगति तेंहि पार ॥
 कीन्हसि राजा भूजद राजू । कीन्हसि रहसि घोर तेंहि साजू ॥
 कीन्हसि तेंहि कहँ बजत बिराछ । कीन्हसि कोद ठाकुर कोद दाछ ॥
 कीन्हसि दरब गरब अहि चोई । कीन्हसि सोभ अषाद न कोई ॥
 कीन्हसि जिअन सदा सब चहा । कीन्हसि मौँवु न कोई रहा ॥
 कीन्हसि सुख अउ कोड अनंदू । कीन्हसि दुख चिंता अउ दंदू ॥
 कीन्हसि कोद भिखारि कोद धनी । कीन्हसि संपति बिपति बज धनी ॥

¹ These encircle the seven regions (*dṛīpas*) mentioned in I, 5. Their names, are Lavapa, Iksu, Surā, Ghṛita, Dadhi, Dugdha, Jala. The author, in stanza 141 gives a different enumeration, viz., Khāra, Khira, Dadhi, Jala, Sura, Udadhi, Kilakila.

² Mēru is the well-known mountain. It represents the northern hemisphere or pole, and is the abode of the Gods. Kukhaṇḍa is Kumēru, the southern hemisphere or pole, the region of the *daityas* or demons. The poet has mixed this up with Kishkindha, also to the south of Oude, and has confounded the two names.

³ *Jari* is a root used for medicine, and *mūri* is a root used for food.

⁴ *Sāuja* is any animal used for food.

दो ॥ कीन्हेंसि कोर निभरीसी कीन्हेंसि कोर वरिबार ।
 चारहि तरुं सब कीन्हेंसि पुनि कीन्हेंसि सब चार ॥ १ ॥

3. The order of these sets of *caupūs* is different in different copies. The above is the order of Iab U K, Icd begin 4, 3, and then go on as above. Is begins 15, 16, and then 3, 4, &c., like Ia. 1. Icd *dihesi baḍāi*; Iac *tehi pāi*, Id *tehi khāi*, Is *tinha jāi*. 2. Ib *bahu sājū*, Ic *tehi sājū*. 3. Iao U K *bilāsū*, U K *kou for koi*. 4. Iacs U *jehi hūi*. 5. Id transposes ll. 5 and 6. Is *jīu sadā sukha*, U *jiyana sadā tinha*, K *jīwa sadā saba*, U *kōū*. 6. Id U *kōti*, Is *bahu dandā*, Id *dhandā*, U K *anandā, dandā*. 7. U *kou*, Ia *ati ghānī*, Id K *puni ghānī*, Is *sāya ghānī*, U *ju ghānī*. 8. U *kou for koi*. 9. Iacd *chārahi*, Is *tinha chāra*, K *bahuri kinha saba*.

3. He made man, and gave him dominion; He made grain for his food. He made the king who taketh pleasure in his kingdom, He made elephants and horses for his array. He made for him many delights. Some made He lords, and others slaves. Wealth made Ho from which cometh pride; He made longings which none can satisfy. He made life which all men ever desire; He made death, from which none can escape. Happiness made He and myriads of joys; sorrow made He, and care and doubt.¹ Some made He poor and others rich. He made frequent prosperity and adversity.

Some made He weak, and others strong. From ashes made Ho all, and again turned He all to ashes.

चो ॥ कीन्हेंसि अग र कलुरी बेना । कीन्हेंसि भीमसेनि अउ चेना ॥
 कीन्हेंसि नाग मुखर बिच बसा । कीन्हेंसि मंच हरर जो उसा ॥
 कीन्हेंसि असीं निचर जंघि पाई । कीन्हेंसि बिच जो मौच नेंहि खाई ॥
 कीन्हेंसि कख मोठ रस भरी कीन्हेंसि कहर बेलि बड फरी ॥
 कीन्हेंसि मधु लावर लेंद मांखी । कीन्हेंसि भवर पंखि अउ पांखी ॥
 कीन्हेंसि लोवा उंदुर चांडी । कीन्हेंसि बडत रचहिं खनि मांडी ॥
 कीन्हेंसि राकस भूत परेता । कीन्हेंसि भोकस देव दस्ता ॥

दो ॥ कीन्हेंसि सचस अठारह वरन वरन उपराजि ।

भगति दीन्ह पुनि सब कहैं सकल साजना साजि ॥ ४ ॥

4. 1. Icds *bhīvasēni*, U *bhīmasainiyā*. 2. P *mukha*, which spoils the metre. 3. Id makes this line the sixth, Is *amiya*, Id *jiuna jehi*, Ic *jiuna jehi*, Id *tehi*, Iads U K *pāi, khāi*. 4. K *karui nimi jū phāri*. 5. K *lāwai jo mākhū*, Icd K *bhawāru patāga*, Is *bhāwara nāga*. 6. Ia K *indura*, Icd doubtful, Ibs U clearly *undura*, Iacd *rahahī*. 7. So Iacd K, Ibs *kinhasi rākasa dēwa daētā*, *kinhasi bhōkasa bhūta parētū*, U similar except . . . *dēwa dayantā*, . . . *bhūta parantā*. 9. Icd K *dihisa*, Ib U *sabahi*.

¹ Two Urdū glosses translate *danda* by غم, grief, but the dictionary meaning of the word is enmity (*dwandwa*). Here it means opposition of ideas, doubt.

4. He made agallochum, musk, and the scented *khas* grass; He made the camphors,—*bhīmasēni*¹ and *cēna*.² He made the snake in whose mouth dwelleth poison; He made the snake-charm which carrieth off the bite. He made ambrosia, which giveth eternal life to him who getteth it; He made poison, which is death to him who eateth it. He made the sugarcane filled with sweet juice; He made the acrid creeper with its manifold fruit. He made the honey which the bee stores in its home; He made the humble bee, the birds and winged creatures. He made the fox, the rat and the ant; He made many creatures which dig the earth and dwell therein. He made demons, goblins and ghosts; He made ghouls and *Dēvas* and *Dāityas*.

He made eighteen thousand creations of varied kinds. To all he gave a means of existence, and with every decoration did he deck them.

चौ ॥ धनपति उहद जेहि क संसार । सबहि देद निजि घट न भंडार ॥
 जावत जगत हसि अउ चाँडा । सब कहँ भुगुति राति दिन बाँडा ॥
 ता करि दिहि सबहि उपराहीँ । मितर सतर कोद बिसरद नारीँ ॥
 पंखी पतंग न बिसरद कोर । परगट गुप्त जहाँ लमि चोई ॥
 भोग भुगुति बड भंति उपाई । सबहि खिखावद आपु न खाई ॥
 ता कर दहद जो खाना पिखना । सब कहँ देद भुगुति अउ जिखना ॥
 सबहि खास ता करि हर खाँसा । ओहि न काड कद खास निरासा ॥
 दो ॥ जग जग देत घटा नहीँ उभर हाथ तस कौन्ह ।
 अउर जो दोन्ह जगत मँह सो सब ता कर दोन्ह ॥ ५ ॥

5. 1. *Ias U ohi, K dhanaita hai jehi kē san°; Is U kā; P have ka; Iad sabai, J nahi ghaṭai.* 3. *K sabhanha, U kou.* 4. *Is puts verse 4 after verse 5, U paragaṭi gupati.* 5. *Ib khawāwai, U āpuni khāi, K āpuna khāi, P might also be read thus.* 6. *K uhai, Iads sō khā°, Ie sabahi bhuguti dēi au jianā; Is K sabahi dēi, U saba kahā dēhi.* 7. *In sabahi so tā kari hērai āsā | ohi na kāhu, &c. Is hari sāsā, ohi, U sabai, tā kara, sāsā, ohi na kāhu kī āsi, K sabhai āsa tā kari hari phēri | ohi nahi āsa ahai kehu kēr ||* 8. *Iao ghaṭata, U K ghaṭai, U ubhai, tasi. 9. Id jo dēta, U K dēhi, K sabha tā kara.*

5. He indeed is a master of wealth, to whom belongeth the universe; to all He giveth continually, yet his storehouse minisheth not. To every creature in the world, from the elephant even to the ant, doth He day and night give its share of nourishment. His eye is upon all: none is forgotten, whether foe or friend; nor bird nor grasshopper, nor aught whether manifest or hidden is forgotten. He deviseth food and

¹ The *Bhīmasēna-karpūra* of Sanskrit.

² The *Cina-karpūra* of Sanskrit.

nourishment of many kinds. All doth He feed, yet eateth not himself. His meat and His drink is this—that to all He giveth nourishment and life. All have hope in him at every breath, nor hath He ever (turned) the hope of any to despair.

Æon after æon doth He give, yet never diminisheth (his store). Yea, so doth He this with both hands, that whatever hath been given in this world, hath all been given by Him.

चो ॥ चादि सोर वरनउं वड राजा । चादिउ अंत राज जेहि राजा ॥

सदा सरवदा राज करेई । अउ जेहि चहर राज तेहि देई ॥

बनर अवनरि निवनरहि जावा । दोसर नाहिं जो सरिवरि पावा ॥

परवत वाहि देखु सब लोगू । चाँडहि करद वलि सदि लोगू ॥

बजरहि तिन कर मारि उडाई । तिनहि बजर कर देर वडाई ॥

काऊहि भोग भुमति सुख सारा । काळ भौख भवन दुख मारा ॥

ना कर कौन्ह न जानद कीई । करद सोर मन चित न सीई ॥

दो ॥ सबद नाखि वड अखिर अरस साज जेहि केरि ।

प्रक साजर अउ भोजर चहर संवारद फेरि ॥ १ ॥

6. 1. *Id adi cka baranau so raja*, *K a li anadi karata jehi chaja* 2. *Ibed karā, dā, laes K jehi, tēhī* *Ibed achata, Is chatrahi achata nachatrāhi, U nichatrīya, K chatra nuchatra nichatrīhi*, *K dorara kor na sarabari* 4 *Is dekha, U K de lha, P* give no clue, a third person singular seems required by the sense, *Is laqa, jūqa, Is cethihi, Ib karahi, U sājogū* 5 *Iuc K trina, trinahi, U udhar, tinhar bajara ki dehi badhai, K tori u 'a)da* 6. *kaha bhūlha bhukha dukhi, la bhukha (?) bahuta, U dukha bhara, K bhuana bhukha dukha bhara* 7. *Ihs K karav so jo mana cunta na hor, la karav so jo mana cunta hor* *K karav or jo ohi mana hor* 8. *U asthura* (which makes the metro right), *las U jehi, K tēhī* 9 *U an bhājar, K tēhī bhā*

6. Let me tell of Him as that great primal king, who from the beginning to the end of things is worthy of his rule. Ever and for ever doth He rule, and whom He willeth, rule to him He giveth. Making umbrellaless him who hath the umbrella of royalty, He giveth it unto him who is without it, no other is there who is equal unto Him. The people all look as He upturneth the mountains, and maketh the ant (that crawleth from beneath them) equal unto the elephant. Adamant He maketh like straw and scattereth it, and again He maketh straw like adamant, and giveth it honour. To one He giveth the food of enjoyment and all happiness, another striketh He with sorrow and a home (supported by) alms. No one understandeth what He hath done, for He doeth that which is beyond the power of mind and thought.

All else is non-existent¹ He alone is ever the same, whose wondrous

¹ Urdū gloss فانى, transient.

creations are such as these. He createth one and destroyeth him, and, if he will, he formeth him again.

चौ ॥ सबसु सबसु सबसु सो करता । सब सब सउं सब सोहि सउं बरता ॥
 परगठ गुपुत सो सरब बिबायो । भरसो चीन्ह चीन्ह नहिं पायो ॥
 मा सोहि पूत न पिता न माता । मा सोहि कुटुंब न कोइ संग-माता ॥
 जना न काऊ न कोइ सोहि जना । जहं लगि सब ता कर सिरजना ॥
 वेद सब कीन्ह जहाँ लगि कोई । वह न कीन्ह काङ्ग कर सोई ॥
 कृत पहिलइ अउ अब रह सोई । पुनि सो रहइ रहइ नहिं कोई ॥
 अउर जो सोइ सो बाउर अंधा । दिन दुइ चारि मरइ कर अंधा ॥

दो ॥ जो वेद चहा सो कीन्हैसि करइ जो चाहइ कीन्ह ।

बरजनहार न कोई सबहिं चाहि जिउ दीन्ह ॥ ७ ॥

7. 1. Id reverses the order of ll. 1 and 2. U *baranañ sō*, Ib *saba ohi sañ waha saba mahā baratā*, K *oha saba sō saba mō waha baratā*, Is *has sañ*. 2. Is K *jo saraba U paragañ gupti*, Ia *cīnha na cīnhata*, Id *cīnha na cīnhē*. 3. Ia *na ohi sāga*, Id *na kōi sāghātā*, U *na kōñ sāghātā*. 4. Ic *na koi wahi jānā*, Is *na waha koi jānā* U *na hou wē jānā*, K *ō kē sirajānā*. 5. Ias reverse order of ll. 5 and 6, K *waha saba*, Ib *waha na kīnha*, Is *oha kīnha*, K *unha na kīnha*. 6. Ia *hutā so pahilahi sō hai sōi*, Is *au hai abu sōi*, K *hutā pahilahi aba hai sōi*, Ic *sō puni rahai rahai na na kōi*, U *sō puni*, K *rahai rahai nahi kōi*. 7. Ia *aur jo hōhī*, U *aur kahai sō*, K *aur je rahai se bō*, Ia *marahī kai*, K *marai kari*. 8. U *jō wai cāhasi kīnhasi*, K *jō oha cāha so kīnhasi*, Ia *karahi*, U *karahi ju cāhahi kīnha*. 9. U *na kāñ*, Ic U *sabai cāhi*, K *sabhai*, *cahui*, U *jīya*.

7. Invisible, formless and untellable is that Creator; He is one with¹ all, and all are one in Him. Whether manifest or hidden, He is all pervading. The righteous recognize Him, but not the sinful. He hath no son nor father nor mother, no family hath He, and no relations. He hath begotten none, nor is He begotten of any, but all created beings proceed from Him. All things, as many as exist, He made; nor was He made by any one. He was at the beginning, and He is now; He alone remaineth existent and no one else. All else that are, are mad and blind, for after but two or four days they do their work and die.

Whate'er He willed that He did, He doeth that He willeth to do. No one is there to prevent Him, and, by his mere will, He gave life to all.

¹ The Urdū gloss translates *baratā* by نزدیک "near," but I know of no authority for this meaning. *Baratā* means *bañ huā*, twisted as a rope is twisted, hence involved in, closely connected with. Compare *Bihārī Sat'sai*, 59, *dīṭha barata bādhi aṭani*, twisting their (mutual) glances into a rope, they bind it from balcony to balcony.

चो । ऊचि विधि चीन्हा करउ निचानू । अस पुरान महं लिखा पचानू ॥
 जीउ नाहिं पर लिखर मोखारि । कर नाहीं पर करर सवारि ॥
 जीभ नाहिं पर सब किहु बोला । तन नाहीं जो बोलाचो सो बोला ॥
 चवन नाहिं पर सब कहु सुना । दिख नाहीं गुननी सब गुना ॥
 नयन नाहिं पर सब कहु देखा । कवन भीति अस आर बिसेखा ॥
 ना कोर होर हर खोदि के रूपा । ना खोदि अस कोर खरस समूपा ॥
 ना खोदि ठाउँ न खोदि विनु ठाँजें । रूप देख विनु निरमल नाजें ॥

दो । ना वच भिला न वेहरा खरस रसा भरि पूरि ।

दिखिवंत कहं नीखरे चंभ सुखस कहं दूरि ॥ ८ ॥

8. 1. *Id cīnha jo, K cētaḥu, Ib purāna mē, Is giinā, bakhānā.* 2. *Ieds jiu nāhi, K jiu nāhi or jiu nāhi, Ia kara nāhi pai sabahi karāhi, Is karai sawāl, U karahi samāl, K karai saharāi (?)* 3. *Ia reverses the order of ll. 3 and 4, Ib jo dōlāve so dōlā, Id jo dōlāvahi dōlā.* 4. *Io reverses the order of ll. 4 and 5, Is has sūnā, gunā, Ia U hiyā nāhi, Id hiyā nahi pai guna saba gūnā, U guninā.* 5. *Ic U K bhāti so jāi.* 6. *Ib nā koi ōhi na ōhi kē rāpā, Io om. this line. Ias om. hai, U nā kou hai ōhi, K na kōi hai hai ōhi, Ia nā kōhū asu rāpa anūpa, Id nā ōhi kē asu tāisa anūpā, Is na oha kāhu 'asu tāisa sarūpā, U nā kōū asu tāisa anūpā, K na oha kāhu asu rāpa anūpā :* possibly *Ia* fits in best with the rest of the passage. 7. *K na binu ōhi thāā, Io rāpa rēkha nāhi, K niraguna nāā.* 8. *Ic K nā hai milā na bichurā, U nā hai milā na waiharā.* 9. *U andhi murakhi kahā dāri, Id mārakhahā.*

8. In this manner know ye Him, and meditate upon Him, for so is the tale written in the holy book.¹ The Lord hath no life, and yet He liveth, He hath no hands, and yet He maketh all things. He hath no tongue, yet He telleth everything. He hath no bodily form, yet that which He shaketh, is shaken. Ears hath He not, yet heareth He all things; Heart hath He not, yet The Wise One discriminateth all things. He hath no eyes, yet all things doth He see; How can anyone discern as He doth? No one hath a form like unto His; nor, like Him, is any one so incomparable. He hath no abiding place, yet He is not without an abiding place. His form is without flaw, and His name is spotless.

He is not indiscrete, nor is He discrete, yet so doth He dwell (within us), and fill us (with himself). To those who can see, He is near, but is far from the foolish blind.

चो । खरस जो दीन्हैसि रतन खोला । ना कर नरन न जानई भोला ॥

दीन्हैसि रसना खर रस-भोजू । दीन्हैसि दसन जो बिहंसर जोमू ॥

¹ *Urdū gloss for purāna, قرآن, the Qurān.* This is quite possible. It will be seen that Mallik Muḥammad frequently uses Hindū words as Musalmān technical terms. *E. G. cālā, 20, 4.*

दौन्हेसि जग ईश्वर कहँ नयना । दौन्हेसि खवन सुनर कहँ नयना ॥
 दौन्हेसि कंठ बोलि जँहि माहीं । दौन्हेसि कर-पल्लव वर माहीं ॥
 दौन्हेसि चरन समूष चलाहीं । सो पर मरम जानु जँहि माहीं ॥
 जोवन मरम जानु पर बूढा । मिछा न तबनापा जब दूँडा ॥
 दुख कर मरम न जानर राजा । दुखी जानु आ कहँ दुख बाजा ॥

हो ॥ कया क मरम जानु पर रोगी भोगी रहइ निचिंत ।

सब कर मरम गोसाईँ जानर जो घट घट मँहँ निंत ॥ ८ ॥

9. 1. *le puni jā dīnhesi ratana amālā, 1s sabahi jo dīnhesi, U dīnhasi, K jānahī.* Throughout, 1s K have *dīnhesi* and U *dīnhasi*, cf. l. 2, n 2. 1s *bīhāsī, U bihasī, K dasana bihasi mukha jōgu, 1ab lōyā for jōgā.* 4. *Inc U jehi māhā, U tihī māhā* 1c reverses the order of ll. 4 and 5. 5. *Jads sōi jāna jehi dīnhesi nāhī, K sō pui a janai jehi nāhī.* 6. *Id jāna hō, 1s jānu hoi, K jōbana marama na jānai mādha 1a milā nāhi tarunāpā dhūḍha, 1c saba dhūḍha, K cahai na tarunāpā cāhai* **dhūḍh* (sic), 1s has *mādhī* and *dhūḍhī*. 7. *Id sukha kara marama, this makes better sense, and is also the reading of Rām Jasan, K jehi kī dukha bāḥ.* 8. *K bhōgi rahi anarnta.* 9. *1b saba kara marama jānu karatā, K ghaṭa rahi nīnta.*

9. And the simple-minded knoweth not the secret of the priceless jewels which He hath given. He hath given us a tongue, and the pleasure of taste; He hath given us teeth, which brighten¹ a smile. Eyes hath He given us to see the world; ears hath He given us with which to hear language. He hath given the throat in which dwelleth our speech. He hath given us fingers and noble arms. Feet hath He given us with which we gracefully walk. That man knoweth their secret who hath none. Yea, it is the old who know the secret of youth, when they find not their young days though they seek for them. The great man knoweth not the secret of poverty, but the poor man knoweth it, to whom poverty is come.

It is the sick man who knoweth the secret of the body, while the healthy man liveth careless; but the secrets of all are known to the Lord, who abideth ever in everybody.

चो ॥ जति अपार करता कर करना । वरनि न पारइ काङ्ग वरना ॥

सात सरम जउँ कागइ करई । भरती सात सहुँद मसि भरई ॥

जावँत जगत साख बन-डाँचा । जावँत-केस रौप्य पँखि पँखा ॥

जावँत खेह रेह जउँ तारि । मेव बूढ खउ जवन तराई ॥

सब लिखनी कर लिखु संसार । लिखि न जाइ नति सहुँद अपाक ॥

खरस कौन्ह सब गुन परमठा । खब-झँ सहुँद बूढ नहिं कटा ॥

खरस जानि मन मरव न चोई । मरव करइ मन बाचरे सोई ॥

¹ Lit., are fit for.

दो ॥ चउ मुगवन्त मोवारँ चउर सो दोर तँहि वैन ।

चउ चउ मुनी संवारद जो मुग करर चवैस ॥ १० ॥

10. 1. *Ib karatā kē karanā*, *K karatā kai karanā*, *Iad barani na kōi pāvai baranā* *Ic barani na pāru kahu kai baranā*, *Is burani na koi jō pārai karanā*, *U burani na jāi āhi bahu baranā*, *K barani na kahu purai jō barani*. 2. *Ib saraga sūta*, *Ia sūta saraga kagada jāu ka°*, *Ic kagada kūi*, *Is K jāu kagada*, *Ic hūi for bharaī*, *K dharatī sūta saraga ma°*, *U has karahi, bharaī*. 3. *Ic* makes this line the sixth, *Ib* transposes *ll. 3 and 4*, *Ib rōma*. *U jōrātū kēna rōma au pākḥā*. 4. *Ia rēha khēha*, *Ied U khēha rēha duniyā*, *Ib būna*, *K nakhata tarāī*. 5. *U likhai sansārā*, *Ic ati samū°*, *Is kabī amū°*, *U bidhi caritū apārū*, *K kabī caritū aparū* کب is evidently a misreading of گت. 6. *Iacds eta guninḥa saba guna*, *U au saba guniyānu guna parayātū*, *K abu guna para°*, *Ib tēhi samūda būduhi nahī ghātū*, *Ia bunda*, *Id aba-hu samūda mahā bunda na ghātū* *Is aba-hu samūda tēhi bunda na ghātū*, *U aba-hu būdu samūda nahī ghātū*, *K as in text*, except *nira* for *būda*. 7. *K garaba na ūṭhā*, *K garaba karai sō būra jhāṭhā*. 8. *Ib bahu guna°*, *U asa guna°*, *Iac sō hoi tēhi*, *Ib cahai sō tinḥa hō bēga*, *U sō hō tēhi*, *K karai sō caha tēhi bēga*, *Rām Jassan cahai sāwārai bēga*. 9. *Id jō guna karahi anēga*, *Is jō guna rahai*, *U karai na nēga*.

10. Very immeasurable are the makings of the Maker; no teller can tell them. If the whole universe took the seven heavens¹ for paper, and filled the seas² of the earth with ink. If it took as many branches as cover³ all the forests in the world, and all the hairs and down (of animals), and all the feathers of birds. If it took the motes of dust and the like where'er it found them, and all the drops in the clouds and all the stars of heaven; and turned them all to pens and wrote, still then it could not write the shoreless ocean of his wondrous works. So hath He manifested all His skill, that even now not one drop of that ocean hath decreased. Think thou of this and let not pride be in thy heart.* For mad is he, who, in his heart, nourisheth pride.

Very skilled is the Lord. What He willeth, for him that quickly is. And so skilfully doth He arrange (creation), that H^o displayeth countless kinds of skill.

चो ॥ कीन्हिउ पुवच एक निरमरा । नाउँ सुहृद पूनिउँ करा ॥
प्रथम जोति विधि तँहि कर साजी । चउ तँहि प्रीति सिद्धि उपराजी ॥
दोपक सेवि जगत कँ दौन्हा । भा निरमर जग मारम चीन्हा ॥
जअं नहिं सोत पुवच-उंजिचारा । खुक्ति न परत पंथ चंभिचारा ॥
दोकरे नाउँ हरै वर सिचे । भउ भरनी जोर पावत सिचे ॥

¹ The seven Heavens, see note to I, 5.

² The seven seas of Hindu tradition, see II, 1.

³ *Bana-dhāḥkḥā*, is equivalent to *bana kē dhāḥkḥanē-wālē*, (branches) which cover the forest. The subject of all these verbs is *sansārā* in the fifth line.

जैर नहिं लोन्ह जगज भरि जाकें । ता कहैं कीन्ह नरक नहैं ठाकें ॥

जगत बसौठ हरि सोधि कीन्हा । दुहुँ जग तरा जाहें जैर लोन्हा ॥

दो ॥ गुन अउगुन बिधि पूजव होरहि सोच अउ जोच ।

बह बिनउव आगद होर करव जगत कर सोच ॥ ११ ॥

11. Ch. 1. *Ia nāu*, U *K nāma*; U *K niramālā, kālā*; *Id pūnō* U *pūnou*, *K puniū*
2. *Ia unha kai*, *Is tinha kulā*, U *jōti tinha kī bidhi*, *K tū kara*, *Is tinha prīti*. 3. *Iab* U *dīpaka aisa*, U *bhā a(ā)jōra*. 4. *Ibcd jāu na hōta asa purukha ujjārā*. 5. *Id nāū*, U *{hāu dāi K {hāvu dāā*, *Is lkhē sikhē*, *K lkhā ... sikhā*. *Ia parhatā*, *K bhau dharamī bhau paṇḍita sikhē*. 6. *Is jēi nahī*, *Ia ohi nāū*, *K janama bhara*. *K dīnha naraka mahā*. *Icd* transpose ll. 6 and 7. 7. *Ia ohi kīnhā*. *Ibds* U *kīnhē ... tīnhē*. *K utima basīṭha dīnha oi kīnhā*, *Ibs* U *K dui*, *Icd dō* *Is* U *K juga*; *Id* U *K tarai nāma*. *Icd ohi* instead of *jāi*, *Is* U *K unha*. 8. *K aiguna*, *Ia pūchihī*, U *hō kai*. 9. *Iao ohi*, *Is* U *unha*, *Id binawata*, *K unha āgī hama binaiiba*; *Id karata*.

11. He made one man without a blemish, named Muḥammad glorious as the full moon. It was his radiancy that God first produced, and then for love of him He created the universe. He kindled that light and gave it to the world. The world became clear, and recognized its (true) way. If that bright man had not been, the dark path would not have been visible. The deity wrote the second place for him,¹ and that man became just who learned his creed.² For him, who hath not taken (refuge in) his name throughout his life, God hath prepared a place in hell. The deity made him His messenger to the world, and whoever hath taken his name passes safely across both worlds.³

God will ask of each his virtues and his vices, (when) there will be the (great) casting up of accounts. But he (Muḥammad) will humbly bend before him, and will effect the salvation of the world.

चो ॥ चारि जेन जो मुहमद ठाकें । चह्रें क दुहुँ जग निरमर जाकें ॥

अवा बकर सिद्दीक सयाने । पंचसद सिद्दीक दीन बेर साने ॥

पुनि सो उमर खिताब सोदाए । भा जग अदस दीन जो आए ॥

पुनि उवसान पंडित बह गुनौ । सिखा पुरान जो आयत सुनौ ॥

अउयद अली सिंघ बरिआह । अउर तो कांपर सरग पताह ॥

¹ That is to say, he was second of all things, God being the first; other created beings followed. Paṇḍit Sudhākara Dvivēdi translates this verse, 'Those men became just who learned his teaching, and that God, (i. e., Muḥammad) wrote his name in the second place, (i. e., heaven); but for them, who throughout their lives did not take his name, (i. e., adopt his teaching), he fixed a place in hell.'

² Lit., teaching. The Urdu gloss gives *اَلْمِلَّة*, the Musalman creed.

³ The *śhalōka* and *paralōka* of the Hindūs. This world and the world to come.

चारि-उ एक महार प्रक वार्ता । एक पंच उउ एक संवाता ॥

वचन एक जो सुनावहिं सीचा । भा परवान दुहें जम बीचा ॥

हो ॥ जो पुरान विधि पढवा सीरै पढत गरब ।

उउर जो भूखे बाबतहि तैहि सुनि खामहिं पंच ॥ १९ ॥

12. 1. *Ia cahū dīnha*, *Ied cahū kū duhū*. 2. *Ia taba ānē*, *Ic wci ānē*, *Is sidika daiya unha mūnē*, *K uni ānē*, *U dīna oi jānē*. 3. *Ibc U puni jō*, *Id puni tchi*, *Ia jaba āē*, *Ib ohī āē*, *Is jāū āē*, *K jīnha jaga adala dīna kahā lāē*. 4. *Ib bahu gūni*, *Id baḍa paṇḍita gūni*, *U puni usi mahā baḍa paṇḍita*. *Ia U K likhā kurāna*. The correction is evidently a scribe's improvement. 5. *Ia bariārā*, *K bala tē kāpat*. *Ias saūhi na kōn rahā jujhārā* (*Is° rā*). 7. *K paramāna*. 8. *K. Kurāna* for *purāna*, . . . *sōi likhā kari grantha*. 9. *Is tē saha*, *K tē suḥi*.

12. Muḥammad had four friends, who (followed him) in his place, and the four had spotless names in both worlds. ABŪ BAKR ḠIDDĪQ, the wise, who first truthfully (*ḡidq*) brought the faith (into the world).¹ Then 'UMAR, who adorned the title (of Caliph). Justice came to the world when he adopted the faith. Then 'UṢMĀN, the learned and wise one, who wrote the *Qurān*, as he heard its verses. Fourth came 'AṢĪ, the mighty lion. When he attacked, both heaven and hell quaked. All four had one mind, and one word, one path and one fellowship. Each preached the same true word, which became authoritative, and read in both worlds.

The very *Qurān*² which God³ sent down (to this world), that holy book they read, and they who (have lost their way) in coming (into the world), when they hear it, find the path.⁴

¹ Lit., brought.

² Here again we have *purāna* used for the Musalmān sacred book.

³ Here *vidhi*, a Hindu technical term.

⁴ Abū Bakr ibn Abī Qubāfa was Muḥammad's dearest friend and father-in-law, and one of his first converts. He enjoyed immense influence with his fellow citizens of Mecca, and earned by his probity the appellation of 'al Ḡiddiq,' 'The True.' He accompanied Muḥammad in the Flight, and on his death (632 A. D.) he became the first Caliph. He died 634 A. D.

'Umar ibn Al Khaṭṭab was converted in the 6th year of the call (615 A. D.). His conversion carried with it so much weight that the Musalmān traditions relate it with miraculous attendant details. Abū Bakr by his eloquence and address, and 'Umar by his vigour and promptitude, supplied the want of the practical element in Muḥammad's character. 'Umar set the example of public (instead of private) prayer, which was followed by other Muslims. He was the leading spirit of the Emigrants (*muhājira*) who had left Mecca at the time of the Flight, and settled in Medina. He procured the nomination of Abū Bakr to be first Caliph, and, as a matter of course, succeeded him as second Caliph in 634. He was murdered at Medina in 644.

बो । बेर साहि देखिखी सुखताज । बारि-उ बूँद तपर जस भाजू ।
 बोखी राज राज बड पादू । सब राजर भुरंधरा सिखादू ।
 जाति खूर बड चाँडर खूरा । बड बुधिनंत सबर गुन पूरा ।
 खूर-नवाई नवो बूँद भई । सात-उ दौप दुनौ सब नई ।
 जसँ लमि राज खरग वर लीन्हा । रसकंदर जलकरन जो कीन्हा ।
 बाघ सुखेमाँ केरि बंगूडी । जग कसँ जियन दीन्ह तेहि दुडी ।
 बड बति गर पुछनि-पति भारी । डेकि पुछनि सब सिधि सँभारी ॥
 दो । दीन्ह बसीस सुखसाद करउ जगहि जुग राज ।

पातिसाहि तुम्ह जगत के जग तुम्हार सुखताज ॥ १९ ॥

18. 1. U *sēra' s̄dha*, K *sēra s̄dha*, U *sulatānā* *bhānā*. Ia *cārihi*, Ic *cāri-u*, Is K *jaça*. 2. Ib transposes ll. 1 and 2. Ib *ohi kahā chāja chatara au pātū*, Is *chāja chālā au*, U *ōhi chātra sāju au*, K *ohi pai chāja chatra au*, Ia J K *pātū.....lilātū*. Ib *rajai*, Ic *sabha rājā*, Id *sabha* (or *sabahi*) *rājanka* (or *rājahi*). Is K *saba rājanka*, U *saba rājānu* (?); 3. Ia K *gunawanta*, Id *sabahi*, Ib *bidihi pārā*, Is *nidhi pārā*. 4. Is *navāi nawa khāḍahu*, K *nāwa nari khāḍahi*. The final word of the half line *بہی*, may be transcribed either *bhai* or *bhaū*. All N give the former, but printed editions give the latter. So also *نی* may be either *naī* or *naē*. I prefer *bhai* and *naī* as giving the best sense. Id *sātahi*. U *dīpa duniā*, Is *dīpa duniā sira*. 6. Ibd *tahā logi*. Ia *kharaḡa bala*, Id *khā para*; Ia *jala karana na kinhā* (جل کرن نیکینان), Ib *جولکرن* Ic *ذوالقران* Id *ذوالقران* U *julikandhara kinhā*. 6. Ib *dēwa jabahi bhara māḥi* U *jāga kahā jīwa dīnha*, K *jaga kahā jīti līnha gahi māḥi*. Ia *pukumi bhāra saba līnha samhārī* | *ōhi sakai pukumipati bhārī* || K *pukumi bhāra ohi ēka sābhārū* | *tau thira rahai sukala sansārū* || 9. Ia *pādashāha*, Ic *bāḍaghaha*, K *tuha jaga para jaga tohāra*.

13. Shōr Shāh is Sultan of Delhi, who warmeth the whole world¹

'Uṣmān ibn Affān was one of Muḥammad's first converts, and married his daughter. He was elected third Caliph on the death of 'Umar. The Qurān was compiled in its present form in his reign. He was killed at the age of eighty in 656, in the rebellion which arose in consequence of the movement, the ultimate aim of which was the deposition of 'Uṣmān in favour of 'Alī.

'Alī ibn Abū Ṭālib was Muḥammad's cousin, and one of his first converts. He followed him to Medina three days after the Flight. He succeeded 'Uṣmān as fourth Caliph in 656, and was murdered in 661 A. D.

The first compilation of the Qurān was undertaken by Zāid ibn Sābit, who was appointed to the work by the Caliph Abū Bakr at the instigation of 'Umar. Zāid had been an amanuensis of Muḥammad. This redaction had no canonical authority, and discrepancies in the text soon appeared. Accordingly, about 659 'Uṣmān confided to Zāid and three other Quraishites the preparation of an edition which was to be canonical for all Muslims. This text was completed in 660, and is the one which is now extant.

¹ Lit., the four quarters. The use of *kharaḡa* is uncommon, but it is the only meaning which I can suggest here. An Urdū gloss gives چاروں طرف.

like the sun. His kingdom and throne beseech him well; low on the earth have all kings laid their brows before him. By caste a Sūr¹ and with his sword a hero; wise is he and full of all skilfulness. In the nine regions the sun (or all heroes) hath set (or bent low) before him,² and the seven continents³ of the world all bowed before him. All his kingdom he won with the might of his sword, as did Alexander, the Zū'l Qarnain.⁴ On his hand is Solomon's ring, and, with it, he gave gifts to the world with full hand. Majestic is he, and a mighty lord of the earth; like a pillar he supporteth the earth and maintaineth the whole universe.

Muhammad blessed him and said, reign thou from age to age. Thou art the Emperor of the World. The world is a beggar at thy door.

चौ ॥ परमं सूर पुष्पि-पति राजा । पुष्पि न भार सूर जेहि साजा ॥
 हय-मय सेन सूर जग पूरी । परबत ठूठि उडहिं होर धूरी ॥
 रदमि रेनु होर रविहि गरावा । मानुष पंखि जेहिं किरि बावा ॥
 सुरें उडि चंतरिख गर जित मंडा । चंड चंड भरति सिद्धि ब्रह्मंडा ॥

¹ Here, and in the following stanzas there is a series of puns on the word *sūra*, which is not only the name of the Afghān tribe to which Shēr Shāh belonged, but also means a hero, and the sun.

² *Lit.* 'In the nine regions there was a bending of *sūra*,' where, again, there is a pun on the word *sūra*, 'hero' or 'sun.' According to the most ancient Hindū Geographers, India was shaped like an eight-petalled lotus. These eight petals, together with the central division, formed the nine *khandas* or regions, viz., Pāñcāla (central), Kalinga (S. E.), Avanti (S.), Anarta (S. W.), Sindhu-Sauvira (W.), Hara-haura (N. W.), Madra (N.), Kaupinda (N. E.). The Purāṇas give a different list of names, viz., Indra (E.), Kāsēumat (N.), Tāmraparṇa (S.), Gubhastinat, Kumārikā (Central), Nāga, Saumya, Vāruṇa (W.), Gāndhārva. See Cunningham's *Ancient Geography of India*, pp. 5 and 66.

³ See I, 5.

⁴ Zū'l Qarnain, means 'The Master of Two Horns.' Muṣalmān tradition varies about this name. According to some, the Zū'l Qarnain was not Alexander the Great, but another saint, who lived at the time of Khāja Khizr, and who was so called from his having two curls hanging, one from each side of his forehead, or because he reached both sides of the world, or because he was noble by descent from both his parents, or because he went through both the light and dark parts of the world, or because he died when struck on one side of the forehead, and then was restored to life, and again died on being struck on the other side of the forehead, and again came to life.

Beale's *Oriental Biographical Dictionary*, (Ed. Keene), says 'Master of Two Horns, a title of Alexander the Great, probably based on coins representing him in the character of Ammon.' Dr. Hoernle informs me that Alexander's coins show his head adorned with two ram's horns. They were widely current in the East, and the Muḥammadans probably gave him that name after his coins.

डोहड़ नमन रँहर डरि काँपा । बाहुनि जार पतारहि चाँपा ॥
 मेव भसमसर समुँद सुखाचौ । बनसँड टूटि खेद भिलि जाचौ ॥
 अगिलहि काऊ पानि खर बाँटा । पल्लिहि काऊ न काँदउँ बाँटा ॥
 दो ॥ ओ गढ नगुड नहिँ काऊही चलत होहिँ सब चूर ।
 जव-हि चढइ पुछमी-पति खेर साहि जग-खूर ॥ १४ ॥

14. 1. *Id sō sājā.* 2. *Is hai kī rēnu, Is hai gai saina.* *U hai naimanti calai.* *Is parabata phāfi hōi sama dharī.* *Ih uṭhali hoi, Is parabata phāfi, K ṭāfi jhikati.* 3. *Is sāra rainu hoi dinahi garāsā.* *Ih parahi rainu, Is K raini rēnu, Id omits this line.* 3. *K pāñchhi.* 4. *Inc U K āpara hoi chāvai brahamanḍā.* *Is dōlai dharatī an brahamanḍā, U nava khāḍī dharatī sukalo brahamanḍā, K khaṇḍai dharatī bhan sata khaṇḍā.* 5. *Is transposes this and the next line.* *U patālahi jhāpā,* *Inc K patārahi jhāpa.* 6. *Is bhui jāhī.* 7. *U ghara bāṭā.* *K kharha kāṭā.* *Is pīchui parā sō kāḍā, Id kahā nahī, K kahā kadan nahī āṭā.* 8. *Is giri tarivara kahā na rahā calata hōta saba cāra.* *Id hohi sō cāra.* *Is saina calata giri tarivara hōhī sabai sata cāra.* *U jo gadha navī na nāni calata hōhi tē cāra.* *K jo giri tarai na kāhu tē calata hōi sabha cāra.* 9. *Inc U K jaba-hī.* *Is calai.*

14. I tell of the heroism of this king, Lord of the world, the weight of whose array is greater than the world can bear. When his army full of horsemen advanceth, covering the earth, mountains crash and fly away in powder, night cometh from the clouds of dust which eclipse the sun, so that man and bird alike goeth home to bed. The land taketh flight, and goeth up into the firmament; earth-dust adorneth each continent,—yea the world, the whole creation and the universe.¹ The Heavens tremble, and Indra quaketh in fear; the snake-god Vāsuki fleeth and hideth himself in the lowest Hell.² Meru becometh a quagmire, the oceans dry up, and the forests break and are mingled with the dust. (When his army marcheth to a halting place) some of his advance guard may receive a share of water and of grass, but for none of his rear guard is there even sufficient mud.

Citadels which have never bowed to anyone, when he advanceth all become dust,—when the Lord of the World, Shēr Shāh, the Sun of the Universe attacketh them.

दो ॥ अदल कहउँ पुछमी जस होई । चाँडहि चलत न दुखवर होई ॥
 नउसेरवाँ जो आदिल कहा । साहि अदल हरि सोउ न कहा ॥
 अदल कीन्ह उखर कर नाई । भर आवा समरी दुमियाई ॥

¹ The ✓ *maṇḍ* has two meanings, either 'to adorn' (*maṇḍana*) or 'to crash,' (*mardana*). The passage here is corrupt in all MSS., and the reading is very doubtful.

² See note to line 5 of the first stanza.

वरी नीच कोर दुखद न पारा । मारत मालुख चीन उकारा ॥
 मोर सिंह रेंगिहिं एक बाटा । दून-उ पानि पिचहिं एक बाटा ॥
 नीर नीर जानर दरबारा । दूध पानि सब करद मिनारा ॥
 धरम निबाउ चकद सत भाषा । दूबर वरी एक सम राखा ॥
 हो ॥ पुछनी सबद असीसई जोरि जोरि कर हाँय ।
 गँग जडँन जल जब खगौ सब खनि बसर सो माँय ॥ १५ ॥

15. In Is this is No. 3. Ch. 1. Iabs jasa prithimī hāi. J jasu. K kasa hāi. Ied cāīā. Is cāīā, K bāīa calata dukhavai nahī hōi. 2. U ādila āhā, K ādila kāhā. Ib sama sōu. U sō uni rāhā. K sari jūja na tāhā. 3. Iab adala jo kinha umara. Iab bhāi ōni, U sigarī, K kīriānā puhumī jahā tāī. 4. U kou. Ib sāna. Ied mānusa suī ujiārā. 5. Is U gāi siggha K gāe sēra. Is dua-u (? dūa-u)* pāni, U dōnō. K dūnau pāni pī. Ia chīra, Ib K chānahī, Is chānī. Ia hōi nūārā, Ied karai nīārā. K pāni sō karahi nīārā. 7. Ib barīhi, Ic vrahā sama, Id balī dū-hī sama. Is dubare baria dua-u, U baria ēka, K dābara balī ēku. 8. Ied saba prithimī āsīsai, Is sabai prithimī āsīsai, U saba prathimī mīlī āsīsai, K sabhai prathimī āsīsai dēi. Ia lāi lāi bhāi mātha, Ic dūi hātha Id kara hātha U jōra jora dūn hātha. 9. Ia gāya jamuna, Ibd gaggha jamuna, Ies gāya jauna jau laki jala. U gagga jemuni jala jau laki, K gagghā jauna jau lagi jala. Ib ammara nātha, Is J ammara mātha. U tau lagi, Id amara to mātha.

15. I tell of his justice,¹ how it is upon the earth. Not even to a crawling ant doth anyone (dare to) give pain. Naushēr-wān² was called 'The Just,' but even he was not equal to the justice of Shēr Shāh. He did justice like unto 'Umar,'³ for the cry for justice to him was (spread over) the whole world. No one dareth even to touch a nose-ring lying fallen on the ground, (much less to pick it up and appropriate it). On the very highways do men sweep up gold. The cow⁴ and the tiger walk together on the same road, and both drink water together at the same landing-ford. He straineth milk and water (mixed together) in his court, and separateth the one from the other. Sincerity marcheth with piety and justice, and the weak and the mighty he keepeth on even terms.

The whole earth blesseth him, folding its hands continually, and crying, may that head endure immortal as long as there is water in the Ganges and the Jamunā.

¹ This reference to Shēr Shāh's justice ('adal') may have a complimentary reference to his son 'Adal. See *J. A. S. B.*, Pt. I, 1890, p. 167.

² The celebrated king of Persia, surnamed 'Ādil, or the Just. He ascended the throne 531 A. D. He was the Chosroes of the Greeks. Muḥammad (B. 571) used to boast of his good fortune in being born when so just a king reigned. He died 579 A. D.

³ The second Caliph in succession to Muḥammad. See note to 12, 9.

⁴ Gōru is properly any domesticated herbivorous animal.

चौ ॥ पुनि वषवंत वषाजउं बाबा । आवँत जगत सबर सुख बाबा ॥
 ससि चउदसि जो इई संवारा । तेऊ चाहि रूप उँजिचारा ॥
 पाप जाइ उँद दरसन दीसा । जग जुहारि कर देइ असीसा ॥
 अइस भानु जग जपर तपा । सबर रूप ओहि आगर हपा ॥
 अस भा कर पुदख निरमरा । कर चाहि दस आगर करा ॥
 सउँस दिखि कर हेरि न जाई । अई देखा सो रहा सिर नाई ॥
 रूप सवाई दिन दिन चढा । बिधि सुरूप जग जपर मढा ॥

दो ॥ रूपवंत मनि माँथर चाँद घाट ओहि बाढि ।
 मेदिनि दरस लोभानी असतुति विनवद टाढि ॥ १६ ॥

16. In Is this is No. 4. 1. *Ih kāhā, cāhā. Id sabahi, K maha.* 2. *U caudasi cāda dai sāvārā. Ibe U dai, Is daiya. U K tā hā. Ic cāhi adhika āji.* 3. *K jōi pāpa. Is pāpa ghaṭai jāi, U K jō, P jō or jau. U jagata juhārai dēi.* 4. *Ic K sabhai.* 5. *Icd purukha sīra niramārā. Is bhā asa sīra pu.* U *asi bhaye sīra purakhi naramālā* (sic). *K asa ohi sīra nāwa niramālā. Ibe dāha. U kālā. K ohi āgari kālā.* 6. *U hēru. Ia jāi jāi dēkha rahai, Ib jō dēkhai so rahai, U jō dēkhā so rahā lubhāi, K jō dēkhai sō raha sharamāi.* 7. *Ic saba āpara. Ib surūpa.* Other Ps doubtful, N *sarūpa. Is darapavanta.* 9. *Is K medani darasa lobhāi. U mēdina darasi tu.*

16. Again, how can I describe his comeliness, for all the world desireth the beauty of his countenance. His comeliness surpasseth in brightness even the full moon which God created. Sin abandoneth those who reverently gaze upon him, and the whole world maketh obeisance and blesseth him. As when the sun blazeth over the world, so, before him, all things hide their comeliness (in shame.) Thus did the sun¹ become a spotless man, with ten times more² beauty than the sun itself. No one can look upon him face to face, and if anyone see him, he remaineth with bent head. His comeliness increaseth by a quarter, day by day, for the Creator formed his beauty above the world.

Comely is he with a jewelled (tiara) on his brow, and the moon waneeth as he waxeth; while the earth, craving to see him, standeth and humbly offereth its praises.

चौ ॥ पुनि दातार इई वड कोन्हा । अस जग दान न काळ दीन्हा ॥
 बलि बिकरम दानी वड अचे । दातिम करन तिवागी कचे ॥
 खेर साहि सरि पूज न कोज । समुंद सुमेर वडहिँ मिति दोज ॥
 दान डाँक बाजर दरवारा । कीरति गई समुंद-चौ पारा ॥

¹ Here again the word *sīra* is introduced with a threefold meaning, hero, sun and proper name.

² *Āgari* means 'more than.' Cf. 381, 2, and 454, 8.

सुखन परसि खर जम भण्ड । दारिद्र भासि दिखैत नष्ट ।

जउ कोर जार एक बैरि नागा । जमन-क भण्ड न भूँषा नागा ॥

दस बसनेष जम जेर कौन्दा । दाम पुत्र सरि सी-उ न दीन्दा ॥

दो ॥ चरस दानि जम उपजा । वेर साधि सुखताम ।

ना बस भण्ड न सोरची । ना कोर दैर बस दाम ॥ १७ ॥

17. Hero 1s resumes the correct numbering. 1. *1abc U dāi, 1s dāira, U dāi, U baḍi, asi, dāni.* 2. *1cd K transpose āhā and kāhē. 1cd U Bali au Bīkrama dāni, K Bali au Kārna dātā baḍa. 1s Hēlana, U Hotana, K Hētina.* 3. *U sara-pūji, 1s K ghaṭai. U sumēru bhāḍāri dōn.* 4. *1s dāka dāna. U dāna ḍaṅka. 1a samūda kai, 1b U samundara pūrā.* 5. *U kañcana barasi sara kali. K kañcana barisa sara kali.* 6. *1a bāra eka māyā. Other P بيرا bira or biri. 1ac janama na hūi bhūkha au nāgā. U janama hūi nahi bhūkhā nāgā.* 7. *1bes jō kīnhā. U K dāsi asinēda jagya jō. 1a tinha-kū surasari dāna na dīnhā. 1b dāna punna suri tāhu na dīnhā. 1d sari saūhi. 1s sē-u na, U sō uni cīnhā. K'unha sabha kē dīnhā.* 8. *U K jaga āpara.* 9. *U kou dai asi.*

17. Again God hath made him so greatly generous, that none in the world hath ever given gifts like unto him. Bali¹ and Vikramāditya² were famed for their generosity, and Hātīm Tāe³ and Karna⁴ were described as lavish; but none of them equalleth Shēr Shāh, for the very ocean and even Mount Mēru, are ever minishing (as they give up their jewels and gold). The kettle-drum of his generosity soundeth at his court, and the fame thereof hath gone even across the ocean. The world touched this Sun,⁵ and became of gold compact, so that poverty fled and went beyond the borders of his kingdom. He who but once approacheth him and asketh, for all his life is free from hunger and from nakedness. Even that (King of old) who performed ten horse-sacrifice,—even he gave not holy gifts like him.

So generous hath Sultan Shēr Shāh been born upon the world, that none hath e'er been like him, or will be, nor doth anyone give such gifts.

बो ॥ सरसद चसरफ वीर पिबारा । नैर मोहि पंथ दीन्ह उजियारा ॥

बोवा बिबर पैस कर दीया । उठी जीति भा निरमर दीया ॥

¹ The well-known Daitya, who gave Visnu his famous three paces of ground.

² "Clarum et venerabile nomen."

³ Familiar to readers of the Bāgh-o-Bahār (story of the second Darwāsh.)

⁴ The famous Hero of the Mahābhārata. The son of Kuntī by Sūrya. He was more famous for his chivalry than for his generosity.

⁵ Again the triple pun on the word *sāra*. Shēr Shāh is compared to a philosopher's stone which changed all that touched it into gold.

चौ ॥ पुनि वपवन्त बन्धकउँ कावा । आवँत जगत सबर मुख बावा ॥
 वसि चउदसि जो दई संवारा । तेऊ चाहि रूप उँजिहारा ॥
 पाप जाइ जउँ दरसन दोसा । जग जुहारि कर देइ अचीसा ॥
 अरुस भानु जग कपर तपा । सबर रूप सोहि बागइ रपा ॥
 अस भा खर पुख निरमरा । खर चाहि दस बागि कर ॥
 सउँह दिखि कर हेरि न जाई । जेर देखा सो रसा सिर नाई ॥
 रूप सवाई दिन दिन चढा । विधि सुरूप जग कपर गढा ॥

दो ॥ रूपवन्त मनि मीयइ चौद घाट सोहि बाढि ।

मेदिनि दरस सोभानी असतुति विनवर ठाढि ॥ १६ ॥

16. In Is this is No. 4. 1. *1b kaha, caha. Id sabahu, K muha.* 2. *U caudasi cāda dai sāvara. Iabe U dai, Is daiva. U K ta hā Ic cahi adhsa āi^o.* 3. *K jar papa. Is papa ghaṭar jāu, U K jo, P jo oi jāu. U jagata juhara dāi.* 4. *Ic K sabhar* 5. *Icd purukha sara niramara. Is bha asa sāra pu². U as bhaṭe sara pu² alhi narāmālā (sic) K asa ohi sara nāra nirāmala. Ibc dahu U kalā. K ohi agari lālā.* 6. *U heru. Is jāi jāi dikhā rahar, Ib jo dikhā so rahar, U jo dikhā so rahar lūbhāi, K jō dikhā sō rahar sharamai* 7. *Ic saba āpara Ib sarupa. Other Pā d nbtful, N sarūpa. Is darapauanta.* 9. *Is K medani darasa lobhānī. U medina daras lu^o.*

16. Again, how can I describe his comeliness, for all the world desireth the beauty of his countenance His comeliness surpasseth in brightness even the full moon which God created. Sin abandoneth those who reverently gaze upon him, and the whole world maketh obeisance and bleaseth him. As when the sun blazeth over the world, so, before him, all things hide their comeliness (in shame) Thus did the sun¹ become a spotless man, with ten times more² beauty than the sun itself. No one can look upon him face to face, and if anyone see him, he remaineth with bent head. His comeliness increaseth by a quarter, day by day, for the Creator formed his beauty above the world.

Comely is he with a jewelled (tiara) on his brow, and the moon waneth as he waxeth; while the earth, craving to see him, standeth and humbly offereth its praises.

चौ ॥ पुनि दातार दई बड कीन्हा । अस जग दान न काहू दोन्हा ॥
 बलि विकरम दानी बड बचे । दानिम करन तिबानी कचे ॥
 खेर चाहि सरि पूज न कोक । समुंद सुखे बडहिँ निमि दोक ॥
 दान जाँक बाजइ दरबारा । कीरति नई समुंद-चौ पारा ॥

¹ Here again the word *sāra* is introduced with a threefold meaning, here, sun and proper name.

² *Agari* means 'more than.' Cf. 381, 2, and 454, 8.

कंसन परसि कर जग भद्रक । दारिद्र भासि दिवंतर नद्रक ॥
 जड कोर जार एक बैरि नाँगा । जगज-ऊ भद्रक न भूँखा नाँगा ॥
 इस बसनेध जग जेद कोन्हा । दान पुत्र सरि सो-उ न होन्हा ॥

हो ॥ चरस दानि जग उपजा धेर साधि दुस्तान ।

ना बस भद्रक न कोरवी ना कोर देर बस दान ॥ १७ ॥

17. Here *Is* resumes the correct numbering. 1. *Iabc U dāṭ, Is dāura, U dāṭ. U baḍi, as, dāni.* 2. *Icd K transposo āhē and kīhē. Icd U Balī au Bīkrama dāni, K Balī au Kārna dātā bādā. Is Hitama, U Holama, K Hitama.* 3. *U sara-pujī, Is K ghūḍar. U sumṛu bhāḍarī doṭ.* 4. *Is dāka dāna. U dāna dughā. In samūḍa kar, Ib U samundara pāu.* 5. *U kañcana barasi sūra kali. K kañcana barasi sūru kali.* 6. *In bāra eka māgā. Other P بيرا or بیری. Iao janama na hū bhūkha au nāgā. U janama hōi nahī bhūkha nāgā.* 7. *Ibes jō kinha. U K dāsi amīda jagya jō. Ia tinha-hū surasari dāna na dīnhā. Ib dāna punna sari tahu na dīnhā. Id sari sūhī. Is se-u na, U so unī cīnhā. Kunha sabha ke dīnhā.* 8. *U K jagu āpara.* 9. *U lou dar asī.*

17. Again God hath made him so greatly generous, that none in the world hath ever given gifts like unto him. *Balī*¹ and *Vikramāditya*² were famed for their generosity, and *Ilātim Tūṣ*³ and *Karṇa*⁴ were described as lavish; but none of them equalleth *Shēr Shāh*, for the very ocean and even Mount *Mēru*, are ever minishing (as they give up their jewels and gold). The kettle-drum of his generosity soundeth at his court, and the fame thereof hath gone even across the ocean. The world touched this Sun,⁵ and became of gold compact, so that poverty fled and went beyond the borders of his kingdom. He who but once approacheth him and asketh, for all his life is free from hunger and from nakedness. Even that (King of old) who performed ten horse-sacrifice,—even he gave not holy gifts like him.

So generous hath Sultan *Shēr Shāh* been born upon the world, that none hath e'er been like him, or will be, nor doth anyone give such gifts.

चो ॥ चरसद चसरफ पीर पिबारा । नैर मोदि पंथ दीवद उँजिबारा ॥

बीसा दिबर पैम कर दीबा । उढी जीति भा निरनर दीबा ॥

¹ The well-known *Daitya*, who gave *Viṣṇu* his famous three paces of ground.

² "Clarum et venerabile nomen."

³ Familiar to readers of the *Bāgh-o-Bahār* (story of the second *Darwēsh*.)

⁴ The famous *Hero* of the *Mahābhārata*. The son of *Kuntī* by *Sūrya*. He was more famous for his chivalry than for his generosity.

⁵ Again the triple pun on the word *sāra*. *Shēr Shāh* is compared to a philosopher's stone which changed all that touched it into gold.

मारन कता खँदर कछन्ना । भा खँदोर कब जाँवा बुझा ॥
 कार सनुंदर पाप मोर मेहा । पोहित धरम लौन्ध कर चेहा ॥
 उन्ध मोर करिब पोडि कर मचा । पाछुँ तीर घाठ जो चचा ॥
 जा कहँ होर चरस कनहारा । ता कहँ गहि छेर सावधि पारा ॥
 दसगीर गाठे के साखी । जहँ चउगाव देखिं तहँ हाथी ॥
 दो ॥ जहँगीर बोधि बिखी निहकलंक जस चाँद ।
 वेर मसकून जगत के चहुँ उन्ध के घर बाँद ॥ १८ ॥

18. 1. Ia jehi (or jinha) mohi, Is tinha mohi, U tē. P (exc. Ia) tinha or tchī. 2. Ia lēse-hī ēka pēma, 1bā U K prēma, Is pīrama (sic). 1b wahi jōti, U ōhi jōta, 1d bhāi sō jōti bhā, 1c bhāi nīramala, K bhāu nīramala. 3. 1b huta ādhēra sō sājhā, 1c huta jo ādhēra asājhā, 1d illegible, 1s mārāga huto ādhīra sō sājhā, so U bnt ādhēra, K mārāga andha hōta sō sājhā. 1b bhā ājēra, 1c U jaya jūnd, 1d parā sājha saba jāmā. 4. K rākhu kai. 5. N unhi, P ohi or unha. Ia کریتی, 1c karī, 1d ohi kara mōra pō. Is pōha kai, U pauḍhi kai K unha mori kairihara (?) pauḍhi kai gāhī ghāṭa juhā rāhī. 1a juhā ōhā, U ghāṭī. 6. 1b jā kē, 1c jū kara aisa hōhī, 1d U K jū kara hōhī aisa, 1a gahī bēga lei lāwai pūrā, 1b K turita bēgi sō ntarāī, 1s turita bēgi so pūwai. U turita ei lai lāwai. 8. Is oi cistī, K rūpa jai se jagu cāda. K oi ati buḍē jagata mahā. 1c hama unha. 1c unha kara.

18. Saiyad Ashraf (Jahāngīr)¹ was an elect saint, and he it was who threw light upon my path. He lit the lamp of love within my heart; the light burned up, and my heart became pure. My way had been dark and invisible, and lo! it became bright and I understood. He cast my sins into the salt ocean, and making me as his disciple took me into the boat of virtue. He grasped my rudder firmly,² and I reached the landing place on the far bank. If a man hath such a steersman,³ he graspeth him and bringeth to the other side. He is a protector, and one who succoureth in time of trouble, and, where (the water) is fathomless, there giveth he his hand.

His family title was Jahāngīr, pure like the moon. He was the Holy Master of the World, and I am the slave of his house.

¹ Saiyad Ashraf was one of the founders of the line of spiritual preceptors, whose representative in the first half of the 16th century (Muḥīu'd-dīn) taught the poet. For full particulars see note to stanza 20.

² This is a difficult passage. *Kariā* is the same as *kaṭī*, an iron ring, or a beam, hence a rudder. Either meaning will do here. Other MSS., and printed editions have *unha mora kara būḍata kai gāhā*, he grasped my hand as I was sinking. *Pāḍhi kai* means 'firmly.'

³ *Kunahāru* or *kanadhāra* is the Sanskrit *karmadhāra*.

बो ॥ तेंहि वर सनन एक निरमरा । बाबो वेश सुभाकर भरा ॥
 तेंहि वर दुर दीपक उंजिघारे । पंच देह कर्षं हरें वेंघारे ॥
 वेश सुवारक पूजिउं करा । वेश कसावळ जनत निरमरा ॥
 दुख-उ अचळ भुव डोळहिं मारी । मेर विचिन्व तिन्व-उ उपराची ॥
 दीन्ह रूप अउ जोति मोसारी । कीन्ह संभ दुजं जग कर तारी ॥
 दुजं संभ डेकी सब मारी । दुजं के भार सिद्धि धिर रारी ॥
 जो दरसर अउ परसर पारी । पाप हरा निरमर भद्र कारी ॥

दो ॥ सुहमद तहां निर्वित पंच जेंहि सेंग सुरसिद्ध पीर ।

जेंहि रे माउ अउ सेवक नेमि पाउ सो तौर ॥ १८ ॥

19 1. *Id ohi oi unha* Is U *unha*, K *tinha*, U K *niyamāla*, *bhālu* Ind شينخ Ibc سبكه Ib *so bhayai*, Ic *sabha quna*, U *sabai quna*, K *sal hagu* Is U *tinha ghua*, K *tinha* *ke ghara dui dila*, Ic *ajura*, *sāyua* Is *daiya sã*. K *daa sã*. 3 *lad* شينخ Ibc سبكه U *akha muhammad*, Ia U K *kala*, *niyamala* 4. Is *khanda khanda*. U *khakhanda tahu*, K *thakhida tahu* 5. Is *khābha*, U *jaqa* *ke nā* 6 Is *teku*, Is *teku* *taba*. U *duhā* *ke bhara* *karati thira rohi* | *dona hā* *kara* *teki* *saba mahu*, K *tau* *tehi* *bhara jagata thira* 7 Is *jinha darasayan* *au parasayan*, K *jinha darasa* *parasa* *unha* *payā*. Is *bhau*, K *bhu* 8. K *nicuta rahu* 9. All copies insert *karu* before *thenua*, except U *jehi* *re naua* *hai karaya*, and K *jehi* *re naua* *karaya*. The omission of either *karu* or *khewaha* is required by the metre, but, except U and K, all copies have both. K *bei* *so lauar* *tra*

19 In his house was a spotless jewel, Hājī Shēkh by name, full-filled with good fortune. In his house were two bright lights, whom God created to show the way. Shēkh Muḥmāḥ glorious as a fullmoon, and Shēkh Kaniāl spotless in the world. Both were steadfast, unmoveable like pole stars, exalted even above Mēru and Kukhaṇḍa¹. God gave them beauty and glory, and made them pillars of the world. On these two pillars supported He the earth, and under their weight the universe remained firm. Whoever saw them and reverently touched their feet, his sins were lost and his body became pure.

O Muḥammad, there is the road secure, where a saintly teacher beareth company. When he hath a boat and a rower, a man quickly gaineth the other side.

बो ॥ नुर मोहिदी सेवक करं सेवा । चकर उतारल जेंहि कर सेवा ॥

जगत्ता भ्रष्ट वेश वरदान । पंच कार जेंहि दीन्ह निधान ॥

अकरदाद भल तेंहि कर नुर । दीन दुनो रोसन सुबकु-र ॥

* चरसद सुहमद के जेंहि सेवा । सिव प्रसन्न संमन जेंहि सेवा ॥

¹ See line 1 of the second stanza.

दाविदास मुस पस चर्चाई, दखत दखत किराई नई नई ॥

भप्र पसन बोहि दखत दखत, कोर कोर जई सरस राते ॥

बोहि सउं नई पाई जव करनी। चकरी जीभ कया कवि बरनी ॥

हो ॥ वेर सो मुस सउं चेला निति विनवउं भा चेर।

बोहि उत देखर पाछुं दरस गोसाईं केर ॥ १० ॥

20. 1. U mohi dai khē². K guru mahūdī kaha eku mai sēwā Iad jā kara, U tūha karu, K jūha mohi khēuā. 2. K āgī, Iad شيخ Ibo سیکه. U baḡa-hanū; Ic U mohi dīnha. 3. U K tūha kē gūnū, Iad سرخرو Ibo سرخرو Is K suru-khu nū, U surakhu nū 4. Ias siddhanha purukhanha jehi sāga khula (Is has jyāū), Ic jai iē siddha purukha sāga khelā. K jūha sādīhyā purukhanha sāga khelā. 5. U lagāe, K dānīara dekhālāē. Ibo U jehi pū, K mana laē. All P givō خضر, N khidīra. 6. Ia U K tēhi haj³. Is jē haj³. U ānī milāē saiyada, K lau lagāe lei saidā nūjē. 7. Id ju pūi karanī, N sāba karanī, P jūbha parāma (?) (پرم), N kadhā. 8. tēhi ghara ka haū cālā, Id tēhi guru kā haū, K uaha rē guru, U K hwaī cēra. 9. Ia ohī tai, U jehī tai, K dekhana.

20. Muḥiū'd-dīn was my preceptor, my steersman, and I served him. He crosseth speedily who hath the ferry-fare.¹ Before him was Shēkh Burhān, who brought him on the path and gave him knowledgo. His spiritual guide was the good Alhadād, who in the world was a light and beautrons in the faith. He was a disciple of Saiyad Muḥammad. Who e'er enjoyed² his fellowship, became a perfected man. To him did Dāniyāl point out the path,—Dāniyāl, who consorted with Ḥazrat Khwāja Khizr. The Ḥazrat Khwāja was pleased with him, and brought him (as a disciple) to Saiyad Rāji Ḥāmid Shāh. From him (Muḥiū'd-din) did I win all my (good) deeds. My tongue was loosened,³ and, a poet, I (learned to) tell my tale.⁴

¹ The fare was the service which the poet rendered his master.

² Lit sported in his company.

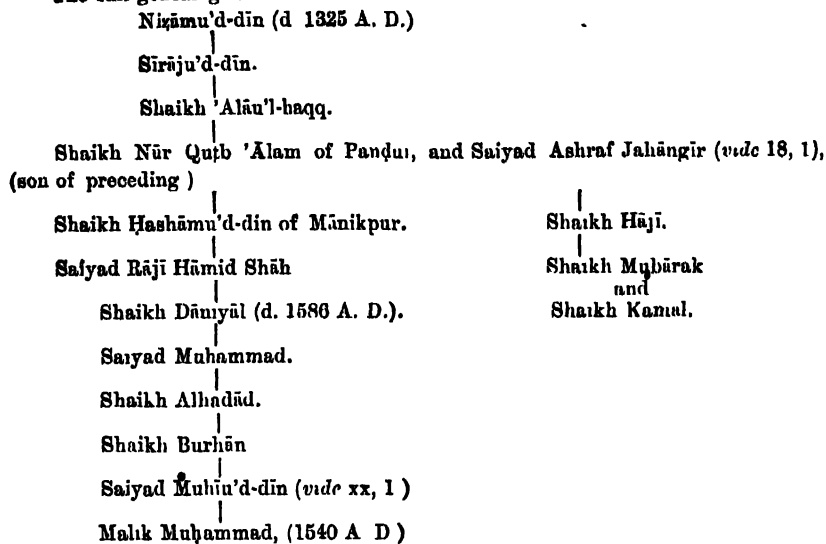
³ Lit. uncovered.

⁴ The following account of Malik Muḥammad's spiritual ancestors is taken partly from what the poet himself tells us, and partly from the Urdū gloss and other sources.

He belonged to the *Chishtiyā Nizāmīyā*, that is to say he belonged to the spiritual descent which took its name from the celebrated Nizāmud-dīn Auliya, the teacher of Amir Khusrō, who died about 1325 A. D. His disciple was Sirājūd-dīn, whose disciple was Shaikh 'Alāu'l-ḥaqq. 'Alāu'l-ḥaqq's son and disciple was Shaikh Nūr Qutb 'Ālam (d. 1444) of Panḍni, and another disciple was Saiyad Ashraf Jahāngir (see 18, 1) Ashraf's most famous disciple was Shaikh Hāji, whose disciples were Shaikh Mubārak, and Shaikh Kamāl. Shaikh Nūr Qutb 'Ālam and Saiyad Ashraf Jahāngir were fellow disciples (*pir bhāī*) and from them eighth in descent came Malik Muḥammad. (Fl. 1540 A. D.)

He was my master and I his disciple, evermore he is before
him as his slave. Through him did I obtain a sight of the Creator.

The full genealogical table is as follows :—



From this it follows that the poet was not an actual disciple of Saiyad Ashraf Jahāngir, as might be assumed from xviii, 1 and ff. Malik Muhammad merely refers to him and praises him as his spiritual ancestor. A tradition makes him the poet's *mantra-guru*, while Muḥiu'd-din was his *vulva-guru*, i. e., the one initiated him, and the other taught him, but this seems to be very improbable, though not inconsistent with Malik Muhammad's own language. Shaikh Dāniyāl, the fifth in the line before the poet appears to have been a friend of the well-known Khwaja Khizr, who introduced him to his preceptor, Saiyad Rāji Ḥamid Shāh. Shaikh Burhān, Malik Muhammad's spiritual grandfather resided at Kal'pī in Bundēl'khaṇḍ, and is said to have died at 100 years of age in A. H., 970, or A. D. 1562-63. See Rep. Arch. Sur. Ind. xvi, 131.

As the prophet Muhammad (see xii, 1) had four friends, so also had the poet Malik Muhammad. He tells us their names were Malik Yusuf, Salār Khadīm, Miyaḥ Salōnē and Shaikh Badē. Concerning these, see the introduction to this paper, and xxi, 1 and ff.

The Urdū gloss concludes (I insert dates and other particulars in parentheses), 'Those who consider that Ḥazrat 'Abdu'l-Qādir Jilānī (b. 1078, d. 1166) (God's mercy be upon him) is descended from Saiyad Muḥiu'd-din, and that Saiyad Rāji Qattāl (d. 1408) is descended from Saiyad Rāji are far from being in the right. It is clear that the line of Qadariyās is descended from Ḥazrat 'Abdu'l-Qādir Jilānī. His preceptor was Ḥazrat Abū Saiyad.

'Saiyad Rāji Qattāl was full brother of Ḥazrat Saiyad Jalālu'd-din of Bukhārā (who was known as Makhdūm Jahāniyān Jahān (Ghasht Shaikh Jalāl), and was his disciple.) He was a Subarwardiya by sect.

* 'Another disciple of Ḥazrat Nizāmu'd-din (the founder of Malik Muhammad's

चो ॥ एक नयन कवि सुखन्द मुनी । सोर विनीता ओर कवि मुनी ॥
 चौद जरस जन विधि चउतारा । दोन्ह कलंक कोन्ह उजियारा ॥
 जग सुखा एकर नयनवाँ । उषा कलंक जस नचतन्ह भावँ ॥
 जउ लहि चाँदहि डामि न सोई । तउ लहि सुगंध बसार न सोई ॥
 कोन्ह सुसुंदर पानि जउ चारा । तउ चति भउउ बसुआ अपारा ॥
 जउ सुमेर तिरसूल विनासा । भा कंचन गिरि लागु चकासा ॥
 जउ लहि घरी कलंक न परा । काँचु सोर नहि कंचन करा ॥

दो ॥ एक नयन जस दरपन लउ तेंहि निरनर भाउ ।

सब रूपनंद पाउ गहि मुच जीवहि कर पाउ ॥ ११ ॥

21. 1. *K kali*, *K kali pānī*. 3. *Ida asa*, *K uā sūra*. 4. *U K ābā dābha nahi*. Rām Jasan's edition gives *basāyuna sōi*, but all P give بسای نسوي 5. *Is tau suṭhi*, *Ib tau usa*, *Ic taba atī*, *Ida tau atī kīnha*, *K tau waha ṭhaev*. 6. *Ias jaṭ*. 7. *K kēu hōi kauēna kī kārū*. 8. *U tasa niramala tehi bhūu*. 9. *K rupavanta bandhahi*, *Is rūpavanta gahi jāhī*, *sō karahī gahi pāu*. *Ib mukha cahahī kai*, *J mukha cūhai kai*, *K mukha dēkhana ke cāu*.

21. Muḥammad the poet was skilful, though he had but one eye,¹ and all who heard him were entranced. Even as God created the moon for the universe, so He put a dark spot upon him, while He made him bright. With that one eye the poet saw in the world, as Venus is brilliant among the other stars.² Until there come black spots upon a mango-fruit, it hath no fragrant scent. God made the water of the ocean salt, but nevertheless He made it immeasurably boundless. Mount Mēru was destroyed by (Çiva's) trident,³ and then it became a mountain of gold,⁴ and reached to heaven. Till black firestains defile the crucible, (the ore) remaineth unsmelted, and becometh not pure gold.

lino) was Shaikh Ruknu'd-din Abū 'l-faṭḥ Ma'ūsir (fl. 1310), who was also disciple of his own father Shaikh Šadru'd-din ('Arif, d. 1309). This last was disciple of his father Shaikh Bahān'd-din Zikariyā (d. 1266) of Mul'tūn, who was disciple of Shaikh Shahābu'd-din (Suharwardiya, d. 1234), who travelled from city to city as missionary (peace be upon him).¹

Makhdūm Jahāniyān was a disciple of Ruknu'd-din abovementioned. The Suharwardiyas form a branch of the followers of the ṣūfī sect, and are named from Suharward, a town near Bagdad, the birth place of the founder Shahābu'd-din above mentioned.

¹ This means that he was literally blind of one eye. The poet still, however thanks God for all His mercies, and points out that every great and good thing in Nature has some detraction.

² Çukra, the regent of the planet Venus has only one eye.

³ I have not traced this legend. It may be a reference to Indra's cutting off the wings of the mountains.

⁴ It is a golden mountain. See Viṣṇu Purāṇa II, 2.

The poet had but one eye, but it is (bright) as a mirror, and his soul is pure. All that are beautiful clasp his feet, and desire to see his face.

चौ ॥ चारि नीत कवि मुहमद पाए । जोरि नितारै हरि पडैवाए ॥
 युसुफ मलिक पंडित सब ग्यानी । पहिरार भेद वान बेर जानी ॥
 पुनि सखार कादिन मति माहीं । जाँडर दान उभर निति माहीं ॥
 निचाँ सखीने सिंघ अपाक । बीर सेत रन चरम जुभाक ॥
 सेख बडे बड सिद्ध बखाना । कर अदेस सिद्ध बड माना ॥
 चारि-उ चतुर-दसा गुन पढे । सब संजोग गोसारी गढे ॥
 विरिख जो बाहरि चंदन पासा । चंदन सीधैं बेधि तैधि बासा ॥

दो ॥ मुहमद चारि-उ नीत निखि भ्रष्ट जो एकर चित्तु ।
 छवि जग साथ जो निबहा खोधि जग विचुररं कित्तु ॥ २१ ॥

22. 1. P *سیرا*, U *sira*, K *ora*. 2. Ia *yūsufa mallika pandita gyānī*, Ib *bahu gyānī*, Id *baḍa gyānī*, K *jū pandita gyānī*. All N have *isayha* for *yusupha*. Iac K *pahilahi*, K *pahilī*. 3. Iac *کادن*, Ib *کاجن*, Id *قارن*, Is *kandana*. Ib *khādahi*, U *ubhai*, K *uḥhai jō bā*. 4. U *apārā, jūjhārā*, Ia *khēla au*, K *briga sitaraini (?) jō kharaya johārā*. 5. Iabc *سپیکه*, Id *شیخ*, Ib K *bakhānī, jānī* (K *mūnī*), Iabd *baḍa jānā*. Is *sādhunha*. 6. Ia *catura guna dasa uei*, Ib K *dasau guna*. U *cārō catura au dasi guna* (sic), Icd *au sāga jōga*, K *au saba jōga*. Is repeats the last line by a mistake of the copyist. Printed editions have *simha jōga*. 7. Ib *jō rūpahi*, U *jō upajai*. K *purukha jō āpē* (آپی for آپھی). K *jau bēdhai bāsā*. 8. Icd *bhā*. 9. Ia *sātha nibāhā*. U *yaha jagu ōra nibahā*. K *sātha jūwana bhā* (جیونبها for جیون بها). Ia U *bichurahī*.

22. The poet Muḥammad¹ had four friends, who by giving him their friendship raised him to equality with themselves. One was Malik Yūsuf, the learned and wise, who first knew the secret doctrine. The next was Salār Khādīm, of mighty mind, whose arms were ever raised either in (wielding) the sword or in (distributing) gifts. The third was Miyaḥ Salōnē, a lion unsurpassed, whose sword fought with heroes in the battle-field. The fourth was Shēkh Baḍē, famed as a sage. He greatly honoured those who were perfected by performing their initiatory rites.² All four were learned in the fourteen³ branches of knowledge, and God himself created their association (with the poet). Let a tree

¹ So also had the Prophet Muḥammad, see xii, 1. Regarding these four men, see introductory remarks.

² *Adēsa* is the initiation of a *cēlā* by a *guru*.

³ The 4 Vēdas, the 6 Vēdāngas, the Purāṇas, the Mīmāṃsā, the Nyāya, and Dharma.

but dwell near a sandal-grove, and if thou pierce it, the odour of sandal cometh from it.

O Muḥammad, when thou hast found these four friends, and ye all became of one soul, when thou hast accomplished their companionship in this world, how can they be separated in the next?

चौ ॥ आपस मगर धरम-बसवानू । तहाँ चार कवि कौन्ह बखानू ॥
 कर बिनती पंडितन्ह सउं भजा । ठूठि मँवारउ मँरवउ सजा ॥
 हउं सब कवितन्ह कर पबलगा । किहु कहि चला तबल हँद उगा ॥
 हिच भँवार नग चहर जो पूँजी । सोलौ औभ ताब कर हूँजौ ॥
 रतन पदारथ बीली बीला । सु-रस पेस-मधु भरी बसोला ॥
 जेहि 'कर बीछि बिरह कर घाया । कहँ तँहि भूख नौंद कहँ हाया ॥
 फेरद भेस रहद भा तपा । धूरि लपेटा मानिक जपा ॥
 दी ॥ सुहमद कया जो पेस कर ना तँहि रक्त न माँदु ।
 जेद सुख देखा तँद रँवा सुनि तँहि चाण्ड चाँदु ॥ ११ ॥

23. 1. *Ibd tahawē bahu* *Io tahā una kabitanha kī*. *Is tahā awara, K tahā awani.* 2. *Ihs U au bi*, *Id binati kara. U kabitanha. K an^o pañḍ'ta sō binati bhājā* *Ib bhākhē ... sākhe, Is bhājā ... sājā. Iad mērehu. Is mēraehu. U fūfi mirāi sāvārāhu sājā. K fūfala sāvārāhu au mērahai sājā.* 3. *N pañḍitanha, U pachilāgā ... dāgā. Is gai dāgā. K kichu kai cahau katha kara āgā.* 4. *Is jō kuchu pūjī U hiyā bhāḍāra āhi naya pūjī. Is khōlu, U lai kē. Is tārā kī. K khōlan, tālu au kē.* 5. *Is U bolē bō.* *K bōlan bō.* *In K pēma rasa, Ids U pēma mada.* 6. *So Iu. Ib kāhā tehi bhākhā kahā tehi kāyā, Ic kahā tehi rūpa kahā kai kāyā, Id kahā tehi bhākhā kahā tehi māyā. Is kā tehi bhākhā nāda kā māyā. U K kahā tehi rūpa kahā tehi māyā.* 7. *Is lāu bhēsa.* 8. *kayā, so U K. It makes good senso. P kabi jo pēma kā. Is kabi jo pīrama kā bhā tana rakuta.* 9. *Io sunā to. Is sunā tā.*

23. The city Jāyas is a holy spot, there came the poet and told his lay. There humbly waited I upon Hindū scholars, and prayed them¹ to correct and mend the broken (metre) and arrangement (of my song). I am a follower of poets, and I go forward saying my say, and beating the drum with the drum-stick to proclaim it,² My heart is a treasure-house, and it holdeth a store of precious stones. I opened it with the key of my tongue and palate. I spoke words,—jewels, and rubies, sweet, filled with the wine of love, and priceless. He whose speech is

¹ *Bhājā* or *bhājā*, is equivalent to *bhrājā*, i. e., *prakāṣita kī*, 'made manifest,' hence 'presented' a petition.

² *Pachalāgā* and *dāgā* would give better metre. *Dāgā* is a drum-stick. The poet means that he is impelled to publish his lay by beat of drum, so to speak, i. e., as loudly as possible. A simpler rendering is obtained by amending the text to *kichu kahī calata bōla dei dāgā*, 'saying my say, I progress, setting down the feet of Language,' in which language is metaphorically compared to a foot, or step (*dāgā*)

wounded by love,¹—What is hunger or sleep or shade to him? He changeth his appearance, and he remaineth in torture, like a jewel covered and hidden in the dust.

O Muḥammad, the body which love hath, hath neither blood nor flesh. Whoever seeth such a man face to face laugheth, but when the lover heareth the laughter tears come (into his eyes).

चौ॥ सन मउ सर सरँतासिस चरे। कया चरंभ वदन कनि कचे ॥
 सिंगल दीप पदुमिनी रानी। रतन सेन चितउर मउ बानी ॥
 बसाउदीन देहिली सुसतानू। राघव चेतन कीन्ह बखानू ॥
 सुना साहि मउ हँका चारै। हिन्दू तुलकन्ह भरै खराई ॥
 चादि चंत जस गाया चरी। लिखि भाखा चउपाई करौ ॥
 कवि निबास रस कवँला पूरौ। दूरि सो निबर निबर सो दूरौ ॥
 निबरहि दूरि फूल जस काँटा। दूरि जो निबरहि जस गुर चाँटा ॥
 दो॥ भवँर चार वन-चंड सउँ जेर कवँल रस बास।
 द।दुर बास न पावई भलहि जो बाहर पास ॥ १४ ॥

इति असतुति खंड ॥ १ ॥

24. 1. *Ia dhā ... káhlā. K dhī ... káhlī* All texts agree in giving the dato (A. II.) as 947. Rām Jassan's edition gives 927 which is certainly wrong. *Ia tāhi dina káhlā* 2. *sēni* so is K J has *saīna*. 3. *Ia suratānā. Is dhīli sulitānā, K dāli, cētāni*, so all N. 4. N have *sāha* not *sāhi*, which is the usual spelling elsewhere. 5. *Is kathā dhī. Ia kathā jo ahi, K āli antu kathā asi dhī káhlī. U bhākhā mai campāi káhlī.* 6. *Ic K bāsa jusa. Ia dāri jo niarahi niarē dāri, Ic dārihi niara niara bhā dāri, Id dārihi niara jo niarahi duri. U duri su niarē niarē dāri.* 7. *Ida sāga káhlī, U sama káhlī. Ic K duri niara jaisai gura. Ida dāri jo niarē so gura, U duri so niarē jusa* 8. *Ic U K khaṇḍa tai. Is khaṇḍahā. Id U kī bāsa, Is kai bāsa. Ib U pāwahī.* 9. *Ib jō āchhi ohi pāsa. Id K sadā jo āchhi pāsa. Is achhi.*

24. It was the year 947 (of the Hijra),² when the poet began to tell this tale in words. Of Ceylon and Queen Padmāvatī, whom Ratna Sēna brought to Citanr castle; of 'Alāu'd-dīn, the Sultan of Delhi, and of how Rāghava Caitanya told him of her. How the Emperor heard and besieged the castle, and how there arose the war between the Hindūs and the Musalmāns. From beginning to end, just as the story runs, so wrote he it in the language of the people, and told it in verse. The

¹ Here we have the first instance of the poet's use of the word *biraha*. He uses it to mean love, especially unhappy love. In countless places it cannot possibly have the usual meaning of 'separation from a beloved one.' *Ghāyā* is translated in the Urdū Gloss by *بھری* 'full of.' I can find no authority for this.

² 1540 A. D.

poet, the bard,¹ and the lotus full of nectar, are near to what is far and far from what is near. That which is near is yet far, like the flower and the thorn (so near and yet so different), and that which is far is near, like sugar and the ants (who dwell so far from it, yet find it out).

So the bee² cometh from the (distant) forest, and findeth the odour of the lotus-nectar, while the frog ne'er findeth the odour, though he dwelleth (in the pond) close to (the flower).

अथ सिंघल-दीप-वरनन खंड ॥ २ ॥

चो ॥ सिंघल-दीप कथा अब गावउँ । अब सो पदुमिनि वरनि सुगावउँ ॥
 वरन क दरपन भौति विवेका । जो जोहि रूप सो तरसर देखा ॥
 भनि सो दीप जहँ दीपक नातो । अब सो पदुमिनि हर अबतातो ॥
 सात दीप वरनर सब लोगू । एक-उ दीप न जोहि सरि लोगू ॥
 दिया-दीप नहि तस उँजिआरा । सरन-दीप सरि होइ न पारा ॥
 जंघ दीप कहउँ तस नाहीं । संक-दीप पूज न परिआहीं ॥
 दीप कुभसयल चारन परा । दीप मऊसयल मानुस चरा ॥

दो ॥ सब संसार पिरियुमौं आए सात-उ दीप ।

एक-उ दीप न कतिम सिंघल दीप समीप ॥ २५ ॥

25. 1. Is K *gārau*, *sunārau*, U *gāwē*, *sunāwē*. Id *au bahu padumini*, J *barana*.
 2. U *niramala darapana*, K *badana kudana* (P) *jasa bhānu bisēkhā*, Ia *jō jehi bhāti*.
 Ib *jehi jasa rūpa sōi tasa dēkhā*, Id *jō jehi*, Is *jō jasa rūpa*, U *taisahi*, K *jehi jasa rūpa*
 so *taisahi dēkhā*. 3. Id *dhani waha dīpa*. Is *dhanya dēsa jehi dīpaka*. K *dhanya*
dīpa jehi. In *dai sāvāri*. Ib *au bidhi padumini autāri*, Ia *au jō padumini dai sāvāri*,
 Is *daiya sāvāri*, U *asa padumini dāi autāri*, K *au padumini dāi autāri*. 4. Iods *saba*
baranai (Is *baranahi*) *lūgā*. Ibe K *tehi sari*, Id *waha sari*. 5. Ib *wasā nahi ājī*,
 U *nahi asa*, K *tasa nahi*. U transposes II. 5 & 6. Is *sarada-dīpa*, U *sārāga-dīpa*,
 K *surā-dīpa*. 6. U *sari nahi*. Ia *layka-dīpa sari pūja na tāhī*, Ib *layka-dīpa nahi*
pūjai chāhī. Ic *layka-dīpa pūjai parichāhī*. Id *layka-dīpa pūja parichāhī*. U *laykā-*
dīpa na pūjai chāhī. K *laykā-dīpa na puja parichāhī*. 7. *Kumbhasathala*, so Iab
 U, Ic *k-s-th-l*; Id, *k-s-ā-h-l*; Is *kūcathila*, K *kōnathila*. Is U *pārā*, *hārā*, K *āra*
bukhānā. Ia *mahasthala*, Ib *mai asthala*, Ic *mahūsthala*, Id U *mewasthala*, Is *mahūsthila*,
 K *mewasthila*. 8. Is K *prithimi*, U *prathyumi*, Ia *au sāta-u saba dīpa*, Ib *au saba sāta-u*
dīpa, U *aura ju sātē*, K *au yaha sata-u*. 9. Ia *na ūpamā*, Ib *na ūpara*, Ic *na pāṭī*,
 U *uttama*, K *dīpa tehi sari*.

¹ Kabi is one who makes poems, *biśa* (*vyāsa*) is one who recites poems.

² I. e., a prophet has no honour in his own country. The Author means that he is aware that his own country-folk, and his own people (the Musalmāns) will not care for his poem; but, on the other hand men of distant lands and of other religions (the Hindūs) will be attracted by it, as the bee is attracted by the distant lotus.

CANTO II.

SIMPALA.

25 Now sing I the tale of Simphala-dvīpa,¹ and tell of the perfect woman² My description is like an excellent mirror, in which each form is seen as it really is. Happy is that land where the women are lights,³ and where God created that (famous) Padminī (Padmāvatī). All people tell of seven lands, but none is fit to compare with Simphala. The Diyā-land⁴ (or land of lamps) is not so bright as it. The land of Saran⁵ cannot bear comparison with it. I say that Jambū-land⁶ is nowhere like it, and that Laṅka-land cannot even fill (the excellence of) its reflection. The land of Kumbhasthala⁷ fled to the forest (before it), and the land of Mahusthala⁸ lost its inhabitants.

In the whole universe, in the world are seven lands, but none of them is excellent beside the land of Simphala.

चौ ॥ मंत्रपदेन सुमंथ नरेख । सी राजा बह ना कर देख ॥
 लंका सुना जो रावन राजू । ते-ऊ चाहि बह ना कर साजू ॥
 जयन-कोटि कटक दर साजा । सबर हतरपति बह नह राजा ॥
 सीरह सबस घोर घोरसारा । सीव-करन बह बाँक गुसारा ॥
 सान सबस बहो सिंवहो । जनु कविदास हरापति बहो ॥

¹ Ceylon. The word *dīpa* means both island and continent

² A Padminī is one of the four classes of women and is supremely the best, see 504 and ff. The Singalese women are all supposed to be Padminis, *omne ignotum pro magno*

³ Here there is a pun on the word (*dīpa* = *dvīpa*), a continent or island, and *dīpaka* a light

⁴ The poet now proceeds to compare Simphala, not with the seven continents of tradition, referred to in line 4, and catalogued in the note to stanza I, 5, but with half-a-dozen imaginary continents named after parts of the human body. *Diyā dīpa*, the land of lights, means the land of eyes. *Sarāna dīpa* (*sarāna-dīpa*) means the land of ears. *Jambū dīpa*, Rose-apple land, is the land of bosoms, to the nipples of which the rose-apple is often compared. *Laṅka-dīpa* is the land of hips. *Kumbhā-sthala*, jar-land, is the land of rounded breasts, a v l is *garbha-sthala* (*garbha-sthala*) the land of wombs; and finally *mahu-sthala* (*madya sthala*), is the land of waists. Under this highly figurative language the poet signifies that the women of Simphala surpassed all these imaginary lands, each in its own peculiar excellence. I am indebted to Paṇḍit Sudhākara Dvivedī for the explanation of this very difficult stanza.

⁵ The poet does not seem to be aware that *Sarāna-dīpa* (*Saran-dīp*, Sorendib) is actually Ceylon itself. Here, as pointed out above, the words also mean 'ear-land'

⁶ Hindūstān or bosom-land.

⁷ Or perhaps Gabhastala, one of the nine divisions of Bhārata-varṣa (India); here used as equivalent to *garbha-sthala*, the land of wombs.

⁸ Or Māvasthala.

चण्ड-पती क विरमसर कहावर । मज-पती क चाकुस मज नावर ॥

मर-पती क कचणँ चण्ड मरिंदू । भू-पती क जग दोसर इंदू ॥

हो ॥ चरस चण्डवर राजा चण्ड चंड भय दोर ।

सवर चार विर नावरीँ सरिवर करर न कोर ॥ १९ ॥

26. 1. Is K *sēni*. U *Gandharpa saīna sukha khaṇḍi*, Is *dhana rājā*. Is *rājā au tā*. 2. U K *rājā ... sājā*. U *tāhu cāhi baḍi*, K *tāhi*. 3. Ibe U K *dola*. K *cārau disā kaṭuka* *Aru gaḍha* is very doubtful. *Uragah* is a possible reading of the Persian character. The following are the readings of the various MS. Tab اور كند Ic ار كند Id (در ور كند) Is *ūrāgē rājā*, U *ghura ghara rājā*, K o *raṅgana rājā*. All printed editions have *au gaḍha-rājā*. 4. U *sōrāhi sahāsa*, Id *sahāsa*, K *sōraha laccha*. Ib *sāwa karana* *lākā tñ°*, Ic *jasa bāka*, Id *syāna karana bākā tumhārā*, Is *sāra karana cālāka tōrākhāra* (sic), U *bara ganē tu°*, K *kyāma karana turaākī jō* (sic) *tokhārā*. The text has no difficulty if the technical meaning of *cyāma-karṇa* is remembered, and if it is recognized that *tukhāra* means 'horse.' 5. Id *aru kailāsa*, Is *imi kapilā airāpati*, U *janu ka bilāsa airāpati*, K *sakā bandhī rāutapai* (sic) *ati bālī*. 6. Ia *sohāwai*, Is *asa-pati*, U *asu-pati kā*, *gaja-pati kā*, K *asu-patīnha*, K *gaja-pati sira apkusa gaja nāwai*. 7. Ia *nara-pati kahaū jō ahi narindā*, Ib *nara-pati ka au kahaū*, Is U *nara-pati ka kahaūra*, K *nara-pati mahā kahaūraei indā*, Ia *bhu-pati ka mahā*, Is *bhua-pati* K *bhua-pati jaga para dōsara ēndā*. 8. Ias U *bhai hōi*, K *mō hoi*. 9. K *sabhai*.

26. Gandharva Sēna was a fragrant¹ prince, He was its king, and that was his dominion. I have heard of Laṅkā,² the kingdom of Rāvaṇa; greater even than his was his majesty. Fifty-six times ten millions formed his battle-array, and over all were princes and commanders of forts. Sixteen thousand horses were in his stalls, black-eared and gallant steeds.³ Seven thousand Singalese elephants had he, each like the mighty Airāvata⁴ of Kailāsa.⁵ He is called the crown of lords of steeds, and with his gond he causeth to bow low the elephants of lords of elephants. Over lords of men I call him a second Indra, and in the world I also call him the Indra⁶ of the lords of earth.

¹ There is here an alliteration between *Gandharpa*, *Gandharva*, and *Gandha*, scent. Some of the MSS. have *Sēni* for *Sēna* throughout the poem. This would lead me to restore the word to the Sanskrit *Sainya*, were there not a strong tradition in favour of *Sēna*.

² Laṅkā is, however, a name of Ceylon. The poet neglects this fact. *

³ *Cyāma-karṇa*, black-eared, is a technical name for a horse. It is the kind used in sacrifices. *Tukhāra* means 'horse,' cf. xlvī, 4; and dli, 4.

⁴ The name of Indra's elephant.

⁵ Indra's heaven. *

⁶ Here Indra is referred to in two aspects. First he is the mighty king of the lower Gods, and hence supreme over lords of men; and secondly he is the storm-god giving refreshing showers to the earth, and hence an object of worship to everyone who lives by cultivation. *

So universal¹ a monarch was he, that all the earth feared him. All men came and bowed their heads before him, no one dared to emulate him.

चौ । जबहि दीप निबारावा जाई । जनु कबिलास निबर भा जाई ॥
वन चंवराउं लाग चड पासा । उठर पुडमि डति लाग चकासा ॥
मरिवर सवर मल्ल-गिरि जाई । भर जग जाँव ररनि चोर जाई ॥
मल्ल-समौर सोजाई जाँव । जेठ जाड लागर तेहि माँव ॥
चौरी जाँव ररनि चोर जावर । हरिवर सवर चकास देजावर ॥
पंथिज जउं पडँचर सहि वाव । दुख बिसरर दुख चोर बिसराव ॥
जेंद वड पाई जाँव चमूपा । बडरि न जाद सवहिं वड भूपा ॥

दो ॥ वस चंवराउं सवन वन वरनि न पारउं वंत ।

पूछर फरद बह-उ रिनु जानउं सदा वसंत ॥ १० ॥

27. 1. *Ih jōhu* (?) (४७), *niarāvē*, *Icd jō wahi dīpa*, *K jō wahi dīpa kē niarē jāi*.
1a *bhau ā*, 1abds *U kabilāsa*, *K kailāsa tinha niarē pāi*. 2. *U K ghani ābarāi*, *U nphā bhāmi*, *K uṭhai bhāmi*, 1s *lāga*. 3. *U tarivara āce sabai suhāo*, *K taruvari sabhai milē ohī jāi*, 1b *bhai tasi chāha*, 1c *sītala chāha*, *U raini kai āē*, *K kō juga chaha raini bhai āi*. 4. 1a *sahāvana* 5. *U abu jamu chāha*, *K au asi chāha raini bhā*. 6. 1a *jūā sahi āvai ghāmā*, *U janthika cali āvai sahi*, *K janthika pahācāi sahi kai ghāmā* 1bdk, *ghāmā*, *bisrāmā*, *U bisarai bhāi sukha bisrāmā*, *K bisarai chana kai bisrāmā*. 7. 1s *K jinha waha*, *U jō pānuī waha chāha* 1a *so dhāpā*, 1c *dukha dhāpa*, 1d *teḥ dhāpa*. 8. *U asi ābarāi suhāvani*, *K asi ābarāi sayhani ghani*, 1d *parai*, 1s *parahi* 9. 1c *cahu dīsa*, *K phūlahī pharahī chāau*, *U mānahu*.

27. When a man approacheth this land, 'tis as it were he approacheth Kailāsa the mount of heaven. Dense mango-groves lie on every side, rising from the earth to the very sky. Each tall tree exaleth the odours of mount Malaya,² and the shade covereth the world as though it were the night. The shade is pleasant with its Malaya-breeze; e'en in the fiery month of Jyāiṣṭha³ 'tis cool amidst it. It is as though night cometh from that shade, and as though from it cometh the greenness of the sky.⁴ When the wayfarer cometh thither, suffering from the heat, he forgetteth his trouble in his blissful rest, and whoso hath found this perfect shade, returneth ne'er again to bear the sun-rays.

So many and so dense are these groves, that I cannot tell their end. The whole six seasons of the year⁵ do they flower and fruit, as though it were always spring.

¹ *Cakkawai* = *Cakravartī*.

² The Western Ghats (*ghāṭs*) famous for their growth of sandal trees.

³ The hottest month in the year, May-June, with its pitiless burning blue-grey sky.

⁴ This is an example of the rhetorical figure *utprēkṣā*, or poetical fancy, with the word expressing comparison omitted. The poet fancifully states that this shade is so dark, that from it is produced all night, while the green shade of the sky is its reflection.

⁵ Hindus divide the year into six seasons of two months each.

ANALYSIS

OF THE

PADUMĀWATĪ

CANTO I.

THE INVOCATION.

Praise of God, the Creator of the universe (1), and of all that is therein, (2); the maker of men and of all that man hath, (3); of pairs of opposites (4). His bounty (5), and might (6). He is an everlasting mystery, neither made nor created nor begotten (7). He is omniscient, omnipotent, omnipresent, neither discrete nor indiscrete (8). He hath endowed man with many blessings, of which he cannot gauge the length or breadth or height (9). His wondrous works are indescribable (10). He made one man for the salvation of the world, the prophet Muḥammad (11), who had four friends, Abū Bakr Ḥiddīq, 'Umar, 'Uṣmān, and 'Alī (12). Shēr Shāh Sūr is Sultan of Delhi. His might (13), valour (14), justice (15), comeliness (16), and generosity (17). Praise of Saiyad Ashraf Jahāngīr, the poet's spiritual ancestor (18), and his two descendants Shekh Ḥājī, and Shekh Mubārak (19). Praise of Muḥīu'd-dīn, the poet's spiritual preceptor and his spiritual descent from Saiyad Ashraf Jahāngīr (20). The poet's description of himself as blind of one eye. He is grateful to God for all his mercies (21). He had four friends, Malik Yūsuf, Salār Khādim, Miyā Salōnē, and Shēkh Badē (22). Filled with poetic inspiration he came to Jāyas, and studied rhetoric under paṇḍits (23); and in the year 1540 A. D., began to write the poem of Ceylon, of Padmāvati, of Ratna Sēna, of 'Alāu'd-dīn, of Rāghava Caitanya, and the siege of Citaur (24).

CANTO II.

DESCRIPTION OF SIMBALA-DVĪPA.

I describe Simbala, best of all the seven *dvīpas* (25). Gandharva Sēna was its king. No king ever was so mighty (26). The *dvīpa* is covered with cool orchards, throwing inviting shade (27). Its fruit-

trees (28). The singing of the birds (29). Its wells and springs, surrounded by holy men of various sects (30). Its tanks (31), the maidens who draw water therefrom (32), the birds that resort thereto (33). The fruit gardens (34), and flower gardens (35). The chief city, Siphala (36). Its streets and markets (37), its courtesan quarter (38), the bazārs (39). The citadel, its height (40), its strength (41), its guards and the regularity with which they are changed (42). Its two rivers Nira and Kṣira, and the spring of Mōṭī Cūra. Its golden tree with magic fruit which gives new youth (43). The four captains of the citadel and their quarters (44). The doorway of the royal palace, with the elephants there (45), the royal stables and horses (46), the royal court (47). The palace buildings (48), the female apartments. The Chief Queen was Rānī Campāvātī (49).¹ She becomes pregnant (50), and a girl is born (51). The naming-ceremony of the 6th night after birth. The Paṇḍits declare her name to be Padmāvātī (52). The astrologers bless her and go home. She grows up of perfect beauty and at the same time learned. Kings of all countries demand her in marriage but are refused (53). She becomes twelve years of age, and the king hearing that she is fit for marriage, builds her a magnificent palace, and gives her damsels to bear her company. She obtains a very learned parrot named Hirāmaṇi, and studies the *gāstras* and *vēdas* with him. Brahmā himself nodded his head as he heard the parrot's explanations (54). Padmāvātī becomes *apta viro*. Her charms (55). The King, hearing that the parrot gives wisdom to Padmāvātī, becomes enraged, and orders it to be killed, that it may not eclipse its pupil. The barber and torch bearer run to kill it, but the Princess hides it, and sends a respectful remonstrance to the king, 'the parrot is only a bird. It loves food and flying, and speaks by rote' (56). The parrot thanks the princess, and says there is no escape from an angry master (57). The Princess replies, 'I cannot bear to lose thee, my darling parrot' (58).

CANTO III.

THE BATHING.

On a certain festival Padmāvātī and her damsels go to bathe in a lake. Description of the various damsels (59). They play on the bank of the lake, and call upon the princess to be happy while she may (60). They disrobe (61). They bathe (62). They sport (62a).² A damsel loses her necklace in the water. They all dive for it (63). The

¹ In some copies a new canto commences here.

² Rām Jasan gives two stanzas the same number, 62.

lake, at the contact of their beauty, becomes clear and the necklace is found (64).

CANTO IV.

THE ADVENTURES OF THE PARROT.

While Padmāvatī was thus sporting, a maidservant went into her palace to steal her flowers and betel to give to a lover. The parrot remonstrates (64a).¹ The maid in a rage twists the parrot's neck, plucks him, and shuts him up in an earthen pot (64b). The parrot's reflections and self-reproaches. He considers what is best to be done (64c). The maid takes the vessel and throws it and the parrot down a well in the forest. The parrot as he is thrown calls upon God (64d). He has hardly finished his prayer when he sees a fig tree hanging over the well. He climbs into it, finds it full of fruit and thanks God. His feathers grow again (64e).² He flies away, and happens on a part of the forest where the birds treat him with great respect. He praises God (65).

When Padmāvatī returns, the major-domo tells her that a cat had come into the house, and that the parrot had flown away from the cage. Her grief. She orders search to be made (66). Her maidens assure her that the search is hopeless (67).

When the parrot has rested a few days in the forest, his fellow birds see a hunter, hidden under a screen of leaves, approaching. Smitten with terror at the apparently moving tree they fly away, but the parrot who is absorbed in contemplation, is struck by the bird catcher's five-pronged rod, and caught by the bird-lime attached to it (68). The hunter breaks his wings and thrusts him into a cage with other birds, they ask him how a wisacre like him has been caught (69). The parrot explains that it was his own fault. He had become happy and careless, and pride goes before a fall (70). The birds comfort him. They agree that the hunter should not be blamed for catching them, but their own stupidity and greed (71).

CANTO V.

CITAU.

Citra Sēna is king of Citaur. His son is Ratna Sēna. Astrologers promise great things for him. He will go to Sindhala-dvīpa and

¹ From 64(a) to 64(e) is an interpolation, found only in some copies of very small authority. The style is different from that of the rest of the poem.

² The ordinary editions insert a line here making the parrot escape from his cage in Padmāvatī's house.

bring back a lovely treasure (72). Some merchants of Citaur start for Siphala-dvīpa to purchase goods. One of them is a poor Brāhman, who starts with borrowed capital. Prices of things in Siphala-dvīpa are so high, that he cannot afford to buy anything (73). The others return home with their purchase, and he is left lamenting (74). The hunter brings the parrot for sale in the market. The Brāhman sees it, and asks it if it is learned (75). The parrot replies that when he was free he was learned, but he has lost his knowledge, otherwise how could he be in a cage and hawked in a bazār (76). The hunter and the Brāhman converse. The latter purchases the parrot, and overtakes his companions on the way to Citaur (77). In the meantime Ratna Sēna has succeeded his father Citra Sēna on the throne, news is brought to him of the arrival of merchants from Siphala-dvīpa, and amongst them a Brāhman with a wonderful parrot (78). The Brāhman is sent for, brings the parrot, saying he had not intended to sell it, but his belly must be filled and he is poor (79). The parrot introduces himself to the king and praises his own qualifications. Says his name is Hirāmaṇi, and that he lived formerly with Padmāvatī (80). The king purchases the parrot for a lākḥ of rupees, and is pleased with its wisdom. He becomes fond of it, and learns much from it (81).

CANTO VI.

THE PARROT AND THE KING.

One day the King goes out hunting, and his chief-queen, Nāgamatī, adorns herself, and, being filled with vanity at her reflection in a mirror, asks the parrot if any one in the world is so beautiful as she (82). The parrot remembering the beauty of Padmāvatī, looks in the Queen's face and laughs. He says all the women of Siphala are more beautiful. She becomes angry (83), and considers that if the parrot is allowed to remain in the palace, the king will hear of their beauty, and will fall in love with them and turn a Yōgi. She calls a maidservant, says parrots are treacherous things, and orders it to be killed (84). The maidservant goes to do so, but pauses to consider that the king is fond of the learned bird, and will be sure to ask for it (85), so she only hides it. When the king returns from his hunt he does ask for it. The Queen says a cat has carried it away. 'It was an impudent bird. I asked about the women of Siphala, and it called me a Nāginī (snake), and said I was not as beautiful as they. The parrot was pretty but unbearable like a too heavy golden ear-ring' (86). The king is angry, and maintains that the parrot was learned and wise (87). The Queen is afflicted at the king's anger. She goes to the maidservant and laments

(86). The maidservant says the Queen has brought it on herself by being angry. Anger is a bad thing (89). When the Queen is utterly downcast, she returns the parrot to the king, saying to the king that she only wished to test him. She consoles him (90). The king adjures the parrot to tell the truth about his history (91). The parrot says, I am Hirāmaṇi, the parrot of Padmāvatī, Princess of Ceylon, a lady of peerless beauty (92). The king's curiosity is excited. He asks for further particulars about Padmāvatī, and says he would like to go to Sīṃhala (93). Parrot describes the charms of Sīṃhala and its women. Its king Gandharva Sōna and his lovely daughter Padmāvatī (94). The king asks the parrot to say all this over again. It complies, and the king becomes enamoured of Padmāvatī from the parrot's description (95). The parrot warns the king, that the way of love is hard, and may cost him his life. 'Learn wisdom from the cry of the peacock, "I die, I die," *mu-ū, mu-ū*, for he hath given himself up to love.' So also other animals are shown as a warning:—the lizard, the ringdove, and the partridge (96). The King replies that he knows that the path of love is hard at the beginning, but he will dare all for the sake of Padmāvatī. He asks the parrot for a complete account of every feature of his beloved, in the form of a *nakḥ'sikḥ* (97).

CANTO VII.

A TALE OF BEAUTY (THE NAKḤ'SIKḤ).

The parrot describes Padmāvatī's hair (98), and its parting (99), her forehead (100), eyebrows (101), eyes (102), eyelashes (103), nose (104), lips (105), teeth (106), voice (107), cheeks (108), ears (109), neck (110), arms (111), bosom (112), belly (113), back (114), waist (115), navel (116) and thighs (117).

CANTO VIII.

THE KING'S PASSION.

The King is thrown into a fever by this description of Padmāvatī's beauty, and lies senseless (118). His relations and friends come with doctors. They diagnose the disease as the same as that from which Lakṣmaṇa suffered when struck by Rāvaṇa's arrow, but the magic root which alone cures the disease is not available. They recommend that it should be searched for regardless of cost (119). The King revives, but only raves unintelligently, or cries like a newborn child. He complains that he has been brought back from the city of immortality to that of mortality. He asks to die (120). They remonstrate, and say it

is useless to fight with fate. 'Thy love is unattainable, therefore do not yearn for it' (121). The parrot gives similar advice. 'Thou canst not conquer Siphala by force of arms. The way is difficult, and can only be traversed by Ascetics, Sannyāsīs, Yōgis and the like. Thou could'st not bear the discomforts of such a life. An ascetic who doth not practise austerities hath no success (122). No success can be gained without austerities, and thy body is besieged by the thieves of thy passions; awake, fool, ere they steal all that thou hast' (123). The king, aroused by these remonstrances, discovers that he is involved in the darkness of ignorance, and that without a (spiritual) guide he cannot find his way to Padmāvatī (*i.e.* wisdom) (124). His Hindū friends remonstrate, but he refuses to hear them; without a guide (or *guru*), he can do nothing (125). He gives up his kingdom, becomes a Yōgī, and puts on the ascetic dress (126). The astrologers say it is not a lucky day for starting. He retorts that in love-matters, no one considers lucky times or hours. They are for people who are in possession of their senses. 'Doth a *satī* ask if it is a lucky day when she mounteth the funeral pyre? I must start on my quest. Do ye all return to your homes' (127). The captains of his army call upon all to accompany him to Siphala, after providing themselves with necessaries (128).

CANTO IX.

THE FAREWELL.

The King's mother implores the king to stay (129). He asks her not to tempt him from the right way. 'Earthly joys are fleeting. My *guru* hath ordered me to journey to Siphala. Farewell' (130). Nāgamatī weeps. 'Let me go with thee, as Sitā did with Rāma. Thou wilt find no Padminī as beautiful as I am' (131). He replies, 'When Sitā accompanied Rāma, Rāvaṇa carried her off. I cannot take thee and be a Yōgī. See how Rāja Bhartrihari left sixteen hundred wives, when he took to a life of mortification,' saying this he starts on his journey (132). His mother weeps. So also his Queens. They break their ornaments. Nine maunds of pearls and ten maunds of crystal bracelets are destroyed. At first there was a great confused sound, and then all was silence (133).

CANTO X.

THE LAND JOURNEY.

The king departs from the city, the people hear of it. Sixteen thousand knights accompany him. They all become Yōgis, and take

the salmon-coloured vestments (134). The good omens at departure. Girls with full waterpots; Goākins crying 'buy my tyre;' flower-girls with garlands; *khuñjan* birds seated on snakes' heads; deer to the right, and door-keepers to the left; dark-coloured bullocks lowing on the right, and jackals motionless on the left; white quails in the sky to the left, and foxes coming out and showing themselves; crows on the left, and owls on the right. Vyāsa has promised success to him who sets out with omens such as these (135). He sets out and says, 'Let to-day be a short stage. To-morrow we must take the long journey (i.e., to-day we live, to-morrow we die). There are mountains and rivers to be crossed, with robbers lurking in the bye-ways. He who goeth steadily forward at ten *kōs* a day will arrive safely (136). Go carefully along the road, picking your way, with sandals on your feet. The road is rough and thorny. On the right lies Bidar¹ (Vidarbha) and on the left Candēri, one road goes to Sindhala-dvipa and another to Laṅkā (sic)' (137). Then says the parrot, 'Let him be guide who knoweth the way. Can the blind lead the blind?' So they asked the way of Vijaya-giri, King of Vijaya-nagara. He says, 'Behind are Kunda and Gōlā (Golconda (?)). Leave on the left (?) Ādhiāra Khaṭōla. To the south on the right lieth Tilinga, and directly to the north is the Karahakaṭaṅgā (? Karnāṭak).² Midway is the main gate of Ratuapura (Kāncī), and to the left is the hill of Jhārakhanda (Baij'nāth). To the left front is Orissa, and cross ye the sea to the south' (138). They wander through the forest, and sleep on the ground, the King alone waking through the night, playing on his five-stringed lute, and with his eyes fixed on the road to Padmāvatī (139). After a month's journey they come to the sea shore. King Gaṇapati approaches and asks who they are. Ratna Sēna asks for boats (140). Gaṇapati agrees, but warns him of the danger of the passage. 'There are seven seas to cross, viz,—the Kṣāra,³ the Kṣīra, the Dadhi, the Udadhi, the Surā-jala, the Kilakilākūta (and the Manasara). There is no one capable of crossing all' (141). The King replies, 'To one in love what is death? I am compelled to follow my path. I am a disciple of Ranga Nātha (? Kṛiṣṇa, Ṣri-ranga),

¹ The poet's strong point is certainly not Geography.

² All this is simply a tentative paraphrase. The readings have not been established yet. Paṇḍit Sudhākara Dvivedī suggests that the correct reading may be *hoi kara ekaṭaṅgā*, the fabulous land of one-legged men.

³ The enumeration of the Viṣṇu Purāṇa is Lavaṇa, Ikṣu, Surā, Ghṛita, Dadhi, Dugdha, Jala. *Kilakīla* is the boiling sound of rushing water. *Kūta* is a *(hēh)* word meaning 'uncertainty, guess.' *Alūta* means 'without uncertainty,' hence 'extreme.' *Kilakilākūta* is the extremely turbulent sea roaring with the boiling caused by subaqueous fire (*baḍavāgni*). The seventh or Mānasara sea is not mentioned till stanza 161. This last name is in direct contradiction to the Purāṇas. Note ² to stanza 2 above should be corrected according to the above list.

I must go where he leadeth me (142). The sea of love is deeper than any of the seven seas. I am not afraid of them (143). I welcome dangers. I have given away all that I have, perhaps God will pass me over in return' (144). Praise of charity (*diyā*, with puns on *diyā*, a thing given, *diyā* a light, and *diyā*, a continent) (145).

CANTO XI.

THE SHIP.

Gajapati seeing his warnings ineffectual gives fully equipped ships (146). They bring the ships to the shore. A minnow, the size of a mountain, appears. The knights express their devotion to the king (147). The boatmen laugh. 'Sea-fish are bigger than fresh-water ones. This is only a minnow. Wait till you see a salmon, which can swallow a thousand of these at one gulp. Then there is a bird, which can carry off a salmon in its beak' (148). They catch the minnow on a fish-line, with an elephant for bait. They pull it in, with difficulty, and it dies (149). Description of the vast size of the minnow. It is cut up and eaten. The knights again express their devotion, at the same time pointing out the dangers of the sea (150). He expresses his determination to go on in spite of dangers, till he finds Padmāvatī (151).

CANTO XII.

THE SEVEN OCEANS.

They embark, set sail and are tossed about. Faith in a spiritual preceptor leads one across all oceans. They cross the Kṣāra, (salt) sea (152). Description of the Kṣīra (milk) sea (153), of the Dadhi (tyre) sea (154), of the Udadhi (hot) sea (155), of the Surā (wine) sea (156), of the Kilakilākūta (boiling) sea. Its flames and whirlpool (157). Hirāmaṇī, the parrot, explains that this is the most dangerous. It can only be crossed by the elect, and on a path like a sword edge,¹ too narrow even for an ant. He who falls goes to hell. He who crosses safely gets heaven (158). The king gives the betel leaf (token of acceptance of a dangerous task by the recipient) to his followers and encourages them. He is determined to go on (159). The various ships of the fleet. How they fared. First goes the king's ship, and he is led by the parrot. They all pass the Kilakilākūta sea (160). They come to the seventh sea, the Mānasara. Description of this sea. Its delights (161).

¹ An adaptation of the well-known Muhammadan legend.

CANTO XIII.

THE ARRIVAL AT SĪMHALA-DVĪPA.

The king notices that the air is balmy (162). Hīrāmaṇi congratulates him, and points out the chief town of Sīphala-dvīpa (163). He points out the fort, and describes it, and its inaccessibility (164). 'Within it dwelleth Padmavati. If thou desire to see her, follow my advice. On that glittering mountain is the temple of Mahādēva. In the latter fortnight of Māgha,¹ occurs the festival of the Ṣṛi-Pañcamī (now called Vasanta Pañcamī). The doors of the temple are opened on that occasion and all the people go there to worship. Padmāvatī will come to worship on that day, and then thou canst meet her. Do thou go and wait at the temple, and I will go to Padmāvatī and ask her to come' (165). The king says he will climb to heaven if necessary, let alone a mountain. The higher he goes the better. Description of the advantages of elevated aims (166), and of the disadvantages of low aims (167). Hīrāmaṇi starts for Padmāvatī's palace, and the king for the mountain. The latter finds a golden temple there, with four doors, and, inside, four pillars. It is a popular place of pilgrimage, for the wishes of pilgrims are granted by it (168).

CANTO XIV.

THE GARDEN, THE GROVE, AND THE TEMPLE.

The king, escorted by 30,000 Yōgīs, circumambulates the temple, and prays for a sight of Padmāvatī (169). A mysterious voice issues from the temple, in answer to his prayers. 'Love conquereth all. He who serveth a God with all his heart and soul, when the God is pleased, obtaineth the fruit of his service.' On hearing this the king seats himself at the eastern door as a Yōgī (170). There, seated on his tiger-skin, he does austerities, ever muttering the name 'Padmāvatī, Padmāvatī.' The eyes of his ecstatic sight are ever fixed on her vision. His very clothes are burned with the heat of his fever (171).

Padmāvatī at this time, by a coincidence, falls into the toils of love. She passes restless nights, and burns with fever (172). Her condition further described. Her nurse asks her what is the matter with her (173). She describes her fevered state (174). The nurse warns her of the dangers of love (175). Padmāvatī replies,—'The pangs of separation from a beloved one are intolerable' (176). Padmāvatī not being comforted, the nurse consoles her, and recommends

¹ Note that the month is Pūrṇimānta. The Ṣṛi Pañcamī is the 5th of the light half of Māgha.

virtue, (love, of course, means search for wisdom in the allegory), and patience. 'Just as one who restraineth his breath is a Yōgī, so she who restraineth her passions is a *satī*, a virtuous woman. The spring festival of Āṣāḍhā approacheth. Worship God on that day' (177). Till the day of the festival is reached, Padmāvatī becomes more and more fevered (178). While she is in this condition, Hirāmaṇi arrives. She embraces him and weeps. Her companions sympathize (179).

CANTO XV.

THE MEETING OF PADMAVĀTĪ AND THE PARROT.

Padmāvatī asks after the parrot's health, and why it had abandoned its cage. The Parrot replies, and tells the story of its escape. 'The hunter sold me to a Brāhman who took me to Jambu-dvīpa. There he took me to Citra Sēna, king of Citaur, who was succeeded by his son (180), named Ratna Sēna. He is all-perfect. I considered him a fit mate for thee, and praised thee to him (181). Fired by my description, he hath been filled with love for thee. He is become a Yōgī and come to Sindhala with 16,000 knights as his disciples, beside other innumerable friends and companions, who make a crowd like a fair at the temple of Mahādēva. There he is watching for thee. Thou art the lotus and he is the bee' (182). Padmāvatī pleased at the account. She becomes filled with pride. 'Who hath dared to put his hand in the lion's mouth? Who will dare to tell my father? Who in the world is fit to be my husband?' (183). The parrot insists that Ratna is a golden jewel, and is worthy of her, and describes his pitiful condition (184). Padmāvatī affected by the description. 'Let me go and see him burning thus. Yet gold improves by burning. I am to blame for this burning. I will visit him. The festival of spring approacheth. I will go to the temple on pretence of worshipping' (185). She rewards the parrot, who prepares to fly away. She taxes him with faithlessness. He says he must return and give the news to Ratna, who is anxiously awaiting him (186). He comes to Ratna, and tells him the news. 'I have met the Guru Gōrakṣanātha,¹ and he (she) sent a gracious message. The Guru is like the black bee,² and the disciple like the fly. That fly alone meeteth the bee, which is ready to give up its life for one meeting.

¹ Here Padmāvatī (wisdom) is shown as the supreme preceptor of all Yōgis, Gōrakṣanātha.

² The Bhṛīṅga, or potter-bee, devours insects and they are born again as Bhṛīṅga. It is now-a-days called the *kumharū, bilanī, or bisundhorī*.

The Guru hath shown great kindness to thee, and hath given thee knowledge in a new incarnation. Thou wilt live by thy death, and the Bhramara-bee will find the lotus, and drink its nectar. The spring time cometh, and thou the bee findeth the nectar. The Yōgi who fully beareth austerities obtaineth final success.' (187).

CANTO XVI.

THE SPRING FESTIVAL.

The festival of the Ārī-Pañcamī comes on. Padmāvatī summons her companions to attend her to the temple of Mahādēva (188). They assemble with music, and in gay dresses. All princesses, and of perfect beauty. It is spring time, and they are like spring themselves (189). She starts. Her retinue of various castes (190). Continuation of names of castes (191). They rejoice amongst themselves (192). The fruit they take with them (193). The flowers (194). The musical instruments. They dance as they go (195). They arrive at the temple. The Gods, seeing them, are astonished, and say they must be nymphs escaped from heaven. Other Gods give other similar explanations (196). Padmāvatī enters the temple. She makes her offering of flowers and fruit, and prays. 'All my companions are married. I alone am a maiden. Give me a husband' (197). Mahādēva being struck senseless by her beauty¹ gives no answer. A mysterious voice tells her this. Padmāvatī complains that it is no use praying to Gods like him (198). Just then a companion comes and tells her that she has seen at the eastern door of the temple a remarkable Yōgi, who looks like a prince (199). She goes to see him. Their eyes meet. He falls senseless with love (200). Padmāvatī sprinkles sandal on him to revive him. He does not wake. So, with the sandal, she writes on his chest over his heart, 'Thou hast not learned the art of asking alms. When the damsel came thou didst fall asleep. How canst thou get thy living? If the sun (*i.e.*, thou) be enamoured of the moon (*i.e.*, me), it climbeth to the seventh heaven (*i.e.*, the seventh story of the castle).' She departs with her companions (201). They leave the hill. Lamentations of the Gods at their departure. They are all dead (202). Padmāvatī enters the palace, sleeps, and dreams a wonderful dream. She asks her friends to interpret it (203). They interpret it as meaning her marriage (204).

¹ Padmāvatī's 'fatal beauty' has this effect on every one who sees her for the first time. So Rājā (200), Rāghava (459), and 'Alān'd-dīn (609).

CANTO XVII.

THE AUSTERITIES OF RATNA SĒNA.

Ratna Sēna awakes from his faint. His desolation at finding Padmāvati gone (205). The very sandal on his chest burns him (206). His lamentations (207). He complains of Mahādēva not answering his prayers. Mahādēva is a mere stone. There is no good in watering a rock (208). Mahādēva explains that he himself was struck senseless at Padmāvati's beauty, and could not help (209). Ratna admits the justice of the excuse. He gives up, and prepares for death (210). He arranges to burn himself to death on a pyre lit by the fire (of separation) which consumes him. The Gods fear that the intense heat will consume the universe (211). Hanumān, who was the guardian of the mountain, goes and warns Pārvati and Mahēṣa.¹ 'I, who burned up Laṅkā, am about to be burned by this Yōgī' (212).

CANTO XVIII.

PĀRVATĪ AND MAHĒṢA.

Mahēṣa, Pārvati, and Hanumān haste to the temple. They remonstrate with Ratna on the dangers of a general conflagration (213). Ratna accuses Mahēṣa of wantonly causing his death, and tells of his hopeless love for Padmāvati. As he says this, the fire of his woo blazes up still more furiously, and, had not Mahēṣa extinguished it with nectar, the whole world would have been burnt (214). Pārvati determines to test his passion if it is real or not. She takes the form of a celestial nymph, and tempts him (215). He withstands the temptation (216). Pārvati recognizes the love as genuine, and recommends Mahādēva to grant him his desire (217). The king recognizes them as Gods (or perfected ones) (*siddha*), for flies do not settle on their body, they do not wink, they throw no shadow, and suffer neither from hunger nor from illusion. Judging from his appearance, this must be Mahēṣa. Without a Guru no one finds the path, and without Gorakṣanātha, no Yōgī obtains perfection (*siddhi*) (218). He falls at Mahēṣa's feet, and weeps floods of tears (219). The universe is flooded: Mahēṣa consoles him. Advises him,—'Until the burglar breaks into the house, he gets no booty. The fort of Sīṃhala has seven stories, no one returns alive who once sets foot upon it' (220). Description of the fort, being at the same time a metaphorical description of the human body. At the foot of the fort is a tank with subterranean gallery. Thou must dive into the tank and enter by this, as a thief enters a house by a mine (221).

¹ The poet identifies Mahēṣa and Mahādēva as the same person.

The tenth or inmost door (*i.e.*, internal perception)¹ is only to be approached by mystical suppression of breath,² and by suppression of self. He who doeth this, understandeth that the 'Ego' is all in all, and alone existeth. He is himself both teacher and pupil, life and death, body and soul (222).

CANTO XIX.

THE ENVIRONMENT OF THE CASTLE.

Ratna having thus received instruction in perfection (*siddhi*) from Mahōṣa, offers thanks to Gauṣa, and, under Mahōṣa's advice, the Yōgis surround the castle. As a thief first examines a house before attacking it, so intend they to dig a mine. The gates are closed, and the King is informed that an army of Yōgis is surrounding the fort. He sends messengers to find out the truth (223). The messengers come to Ratna and ask if they are Yōgis or merchants. Directs them to go to a distance from the fort. The King will be angry. 'If ye be merchants, do your traffic and depart. If ye be Yogis, finish your begging and go' (224). Ratna replies. 'I am come to beg, and will take what the King giveth. Padmāvatī is the daughter of the king, I have become Yōgī for her, and am come here to beg for her' (225). The messenger is angry. Threatens Ratna. 'If the king hear he will let elephants loose on thee, will fire thunderbolts at thee. Thou art demanding a thing thou canst not even see. Art thou mad?' (226.) Ratna replies, 'I am a Yōgī, and can but do what becometh my profession. Thy power is in the elephants of Sindhala, and mine in the elephant of my Guru. He can destroy thine elephants, and turn mountains into dust' (227). The messenger returns and reports Ratna's words to the king. The latter is enraged, and orders the Yōgis to be killed. The prime minister remonstrates. 'If thou kill them, they are but beggars; and if thou art defeated, thou wilt be disgraced. Let them remain below the fort. How many Yogis have come and gone. Leave them alone, and they will have to go away for want of food' (228). Ratna wonders why the messenger does not return. He writes a letter to Padmāvatī, and sends it to her by the parrot (229), with a verbal message, recalling their former meeting (230), and describing his woes (231). He ties the letter with a golden thread to the parrot's neck. The latter carries it to Padmāvatī. Her lamentable condition (232). She addresses the parrot, and laments her separation. The parrot

¹ In the previous stanza, the nine openings of the body are described as doors, and the tenth door is internal perception.

² One of the exercises of Yōgī austerities.

replies,—‘The Yōgī whom thou sawest at the temple of Mahādēva is distraught for thee. He doth nought but murmur thy name’ (233). His sufferings. ‘His life-blood is reddening the whole world.’ Her cruelty in not returning the love (234). ‘When thou didst sport at the spring festival, thou didst mix the vermilion of thy forehead with his blood. He wept, and would have burnt himself upon a pyre had not Mahēṣa and Parvātī intervened. They extinguished the fire and showed him the road,—the road that leadeth to death. The path of love is difficult. If a man climb it, heaven is at the top; if he fall on the way, he falleth into hell. His desire is now but to see thee, whether he receive consolation from thee or die hopeless. He hath sent a letter to thee. Now give the order whether he is to live or to die’ (235). He gives her the letter. Pōetical description of the effect of the burning words contained in it (236). Padmāvati takes the letter, but doubts the sincerity of his love (237). She writes a letter in reply:—‘When I visited the temple, why didst thou not tie the marriage knot? Thou becamest senseless, and, for modesty, I could not speak before my companions. I threw sandal on thee, but thou didst not awake. Now he, who like the moon, climbeth the sky, and risketh his life, obtaineth his object (238). Other heroes have unavailingly aspired to my hand. I am queen Padmāvati. I live in the seventh heaven (or story of the castle). He will obtain me who first destroyeth himself (239). I am pleased at receiving thy letter. Dare greatly, and thou wilt obtain me’ (240).

Description of Ratna's condition, while waiting for a reply to his letter. He is at the point of death, when the parrot arrives with Padmāvati's letter, which was like medicine to him (241). He revives. The parrot gives him the letter and message of Padmāvati, *viz.*, ‘The Guru calleth his disciple quickly. She wisheth to make thee perfected. Come quickly. Life dwelleth in thy name. Thy way is within mine eyes, and thy place is within my heart’ (242). Ratna gets new life. His delight, and desire to obey her (243). He goes by the path which Mahēṣa had pointed out to him, and dives with his disciples into the tank at the foot of the fort.¹ He finds the door of the secret passage. He finds a zig-zag path, but it is morning when he commences to ascend the fort. There is a noise in the town that thieves have entered the castle (244). King Gandharva Sēna sends for his paṇḍits, and asks them what is the proper punishment for Yōgis who do house-breaking. They reply, impalement (248). The Prime Minister warns the king to be careful. ‘Take care lest these Yōgis be perfected ones (*siddha*)’ (246). The king orders his army to assemble to seize the Yōgis. The

¹ See 221. *

portents which ensue (247) Ratna Sēna's companions wish to fight the army (248) Ratna Sēna dissuades them. He is ready to sacrifice himself (249). The king surrounds them. Ratna consoles them, and sings on his lute in honour of the Guru (250). 'I trust in my Guru and care not for what may happen (251) Padmāvatī is my Guru, and I am her Cēlā. I am her slave' (252). Padmāvatī fades away in Ratna's absence (253). She is heart-broken, her companions sympathize with her (254), and try to console her, but in vain (255).

CANTO XX

THE CONSOLATION OF PADMĀVATĪ.

The companions console her (256). She laments, asks for poison. She calls for Hīrāmaṇi (257). The nurse brings him. He comforts her. She faints, and recovers (258). He continues; describes Ratna Sēna's condition (259). Hīrāmaṇi feels her pulse, and finds out that the creeper of love has really taken root in her heart. He describes to her the plant (260). Padmāvatī expresses her trust in the parrot: asks him to bring about a meeting between her and her beloved (261). The parrot tells how Ratna had attempted to approach her, but as morning came before he had ascended, he had been seized and condemned to the stake (262). Padmāvatī's consternation. 'If Ratna dies, I shall die too. I am no longer Guru. He is Guru, and I am Cēlā' (263). The parrot replies,—'Although he is thy Cēlā, he is now perfected. Thy perfection hath gone to him, and his sorrows have come to thee. Ye are one in one. He cannot now be harmed by death' (264). She is comforted and tells the parrot to tell Ratna to give up asceticism and act as a king, for he is king of her heart (265).

CANTO XXI.

THE IMPALEMENT.

Ratna is led with his followers to the place of impalement. The people pity him and say he cannot be a Yōgi. He must be a prince in love. When he sees the stake he laughs. The people ask why (266). He replies that he is glad to die. He has wished for death. Asks that there may be no delay (267). They tell him to call the one he loves best to mind. He proclaims his love for Padmāvatī (268).

The Yōgis being in this danger, the throne of Mahādēva is shaken. He discusses with Pārvatī as to what had best be done. They disguise themselves as bards (bhāṭas) and go with Hanumān to the scene of execution and hide themselves. There Gandharva Sēna has a large army

(269). Ratna is calling to mind Padmāvati, and thanking Māhēṣa, who showed him the way to her. Pārvatī moved to pity looks at Mahādēva. She asks Mahādēva to save him (270).

In the meantime Hirāmaṇi comes to Ratna with the message of Padmāvati. Ratna Sēna rejoices at the message. The parrot, and, in sympathy with him, all the people, moved to tears. The parrot and the Bard (Mahādēva) agree to risk their lives, and go towards the king Gandharva Sēna (271). The Bard, seeing Gandharva Sēna, and unable to bear Ratna Sēna's ill-treatment, determines to be a man and risk his life. He approaches Gandharva Sēna, and salutes him and the court with his left hand. He says,—‘Yōgis are water. Thou art fire. When these two fight, the fire is extinguished (272). This is not merely a Yōgi. He is a great king. If thou kill him there will be a tremendous battle, and every being will help him. When Mahādēva (his protector) rings his battle-bell, Brahmā, Vāsuki, and the eight elephants of the quarters will appear. Volcanoes will burst forth into action, and mountains will be rent into dust. Kṛiṣṇa will come, and a crowd from Indra's heaven, thirty-three crores of Gods and ninety-six cloud-armies. The ninety *nāthas*¹ and the eighty-four *siddhas* will come. Garuḍa and vultures will hover in the sky’ (273).

Gandharva Sēna asks,—‘Who is this insolent bard who salutes me with his left hand? Who is this Yōgi who comes to my palace and enters it by a mine like a thief? Indra, Kṛiṣṇa, Brahmā, Vāsuki, the Earth, mount Mēru, the Moon, Sun and Sky, the clouds, the mundane tortoise all fear me. What fear I for all this?’ The Bard warns him to have a care (274). He quotes as an example the case of Rāvaṇa who was killed by two ascetics, Rāma and Lakṣmaṇa. Pride goes before a fall (275).

The Bard, seeing the king angry, comes forward humbly, and addresses him. ‘Bards are sacred persons, Bards are incarnations of Iṣvara. A Bard comes with his life in his hands. He is inviolable.’ The king asks why the Bard has been so insolent, and tells him to be more respectful, and to tell who he and the Yōgi are (276). The Bard replies:—‘The truth is, there is one Ratna Sēna, son of Citra Sēna, King of Citaur in Jambu-dvīpa. Him alone do I salute with my right hand, and none else. My name is Mahāpātra, and I am his impudent beggar’ (277).

Mahādēva ashamed (at the king not believing him, and seeing himself compelled to disclose his real name), still in his character as a bard,²

¹ Jagannātha, Vaidyanātha, &c.

² *Dasaśundhī*, means ‘bard.’ It is the Sanskrit *daśadhī* ‘the man of ten wits.’ It is commonly used together with *bhāṣa*, the two words together meaning ‘bard.’

again addresses the king in humble language. 'Gandharva Sēna, mighty king, I am an incarnation of Mahēṣa,¹ hear what I say. I must tell thee what will happen. Why shouldst thou be angry? This is a prince, and not a Yōgī, who heard of Padmāvatī, and became ascetic for her sake. He is the son of a king of Jambu-dvīpa, and what is written in the book of fate cannot be erased. Thy parrot brought him hither, and thou becamest angry thereat. Then this matter was heard in Īvalōka. Marry the pair and do a virtuous action. He who begged from thee, will not leave thy door till he dieth. Even though it be a golden cup, give him alms, and kill him not' (278). Gandharva Sēna angrily calls him a beggar-bard, and tells him to go. 'This Yōgī must be impaled. I fear no one. Who is powerful as I (279) ?'

Mahēṣa at length brings up his troops, and puts the Yōgis behind them. The Prime minister advises the king not to fight, but the latter obstinately persists. Angada, the hero of the *Ramāyaṇa*, comes to help the Yōgis. He begins by flinging five of the king's elephants into the sky (280). The battalion of elephants is ranged so as to protect the rest of the king's army. Hanumān comes and sweeps away the battalion with his tail (281). Īṣvara's battle-bell, and Viṣṇu's battle-conch is heard. All the Gods, demons, &c, come down to the fight. Gandharva Sēna falls at Mahādēva's feet, prays for mercy, and offers to give his daughter to whomever he may order (282). Thus Mahēṣa performs the office of an ambassador; at first bitter, then sweet. Recommends Gandharva Sēna to ask Hīrāmaṇi about Citaur. 'Ratna is a jewel; test him, and marry him to your daughter' (283). The king sends for the parrot and asks him how the Yōgis came to the palace (284). The parrot begins by flattering the king (285). He tells his adventures and why he brought Ratna here. The king is pleased (286). The king is convinced, first by the words of the bard, and then by those of Hīrāmaṇi. He sends for Ratna Sēna. He is identified as a prince by the thirty-two signs (287). Every one seeing him to be worthy of Padmāvatī, rejoices. The war music is changed to nuptial melodies (288). The king consents to the marriage. The Gods go home. Ratna Sēna and his princes put off their ascetic garments. General happiness (289).

[Here an *U'dū* edition adds:—

The body is Citaur-fort, and the soul is the king. The heart is Siṃhala-dvīpa, and Brahmā is the Padmini. The *guru* is the parrot who sets one on the way. Illusion is 'Alāu'd-dīn, and Satan is Rāghava. Worldly cares are Nāgamatī (the snake-queen), who biteth those who love her.]

¹ See stanza 212, note¹.

CANTO XXII.

THE MARRIAGE.

The date fixed for the marriage. The preparations (290). The dress for Ratna Sēna (291). The marriage procession (292). Padmāvati mounts to the top of the palace and watches the procession (293). Her companions point out the bridegroom (294). Padmāvati's happiness at seeing Ratna. She faints from ecstasy (295). She recovers and explains that she had fainted in sorrow at the thought of leaving her home (296). The arrival of the procession (297). The feast prepared. The table arrangements (298). The food at the feast (299). There is no music, and Ratna and his guests refuse to eat. The Paṇḍit asks why (300). The king explains that there is no music. Sound was created before the Vēdas. When Adam was created, knowledge entered into his body with sound. At meal-times there should be enjoyment. The eyes, tongue, nose, and ears should all be gratified (301). The Paṇḍit replies that music is intoxicating and excites the passions, hence it is not allowed at meals (302). *Sharbat* and *attar* are distributed; the marriage ceremonies are performed (303). Continuation of marriage ceremonies (304). Ratna Sēna receives the dowry, and is invited by Gandharva Sēna to remain in Sindhava-dvīpa (305).

CANTO XXIII.

THE NUPTIAL CHAMBER.

Ratna Sēna is given a palace to live in (306). Description of it (307). Of the slaves in the nuptial chamber (308). Of the nuptial bed (309). The bridesmaids separate the bride from the bridegroom till night-fall, and proceed to adorn the latter. The weariness of the hours without Padmāvati (310). At night-fall the bridesmaids come and ask him (teasing him) where she is (311). Ratna entreats to be allowed to meet her (312). (No 313 not in any edition). His entreaties continued¹ (314). The bridesmaids tease him still. They say they do not know where she is. He is a Yōgi. What has he to do with princesses? She is busy with the twelve methods of adornment (*ābharaṇa*) which are as follows (315),—bathing, application of sandal, vermilion on the parting of the hair, a spangle on the forehead, collyrium, earrings, nose-stud, betel to redden her lips, necklets, armlets, a girdle and anklets. Then there are the sixteen graces (*ṣiṣṭyāra*),—four long, four short, four stout, and four thin (316).

Description of Padmāvati adorning herself (317). Her features

¹ 310-314 are full of similes derived from chemistry.

(318) Her ornaments (319). Being fully adorned she delays going to her husband. She is frightened at what may happen (320). Her bridesmaids encourage her (321). She sets out for the nuptial chamber. Her charms as she goes (322).

She enters the nuptial chamber. Ratna Sena is struck senseless by her beauty. They revive him, saying his Gurn (*i.e.*, Padmāvati) is here (323). He takes her arm and leads her to the bed. She modestly shrinks back. She says he is a Yōgī and she does not like him (324). He says he became Yōgī for her sake. He recounts the dangers he has gone through (325). She replies that self-praise is no recommendation. No one ever heard of a Yōgī-king. She teases him. 'Thou art not a Yōgī, but a mere beggar. A Yōgī, by suppression of his breath, can mount into the air and fly in spirit where'er he listeth. Thou art but a beggar disguised as a Yōgī, as Rāvaṇa was who carried off Sitā. When the night sees the moon it is no longer dark, and so, Yōgī, now that thou hast become king thou hast forgotten thy austerities' (326). He repeats that he was but a pilgrim of love. 'Be kind. Even Sitā gave alms to Rāvaṇa. I have become crimson, (*i.e.*, glorious) from the reflection of thy colour, and like the sun have I mounted to the sky. Where the moon is cool, how can I be hot? Therefore, lady, fulfil my heart's desire (327)! She replies (teasing him still). 'Thou sayest thou art crimson. How didst thou get this colour? It is not from thy fine clothes. It seemeth to come from a burning heart. The red *majīṭha* dye cometh from long cooking. The Palāça tree has to be burnt before it beareth its scarlet blossoms. Betel and the areca nut do not become red till caustic lime is added' (328). He replies. 'I have been burnt in the fire of love' (329). Padmāvati,—'Thou art a wandering Yōgī, thou wilt not remain faithful' (330). Ratna;—'Though I may roam, I will never forget. But I will not even roam' (331). She challenges him to play *caupar*. He consents (332). He admits that he is beaten by her. Figurative comparison of *caupar*, and the game of love¹ (333). Padmāvati laughs. 'I see indeed thou art crimson from my colour. I went to the temple when Hirāmaṇi told me thou wast there. I was enchanted at thy beauty, and I loved thee (334).² What magic art thou master of, that thy pains were reborn in me? I suffered all the pangs that thou didst suffer. There is naught between us now, all

¹ Till a proper text is obtained it will be impossible to translate 332 and 333 correctly. They are full of metaphorical allusions to the game of *caupar* or *causar*, the Indian Backgammon. I have taken the trouble to learn the game, and have consulted several good players, but none of them can interpret the present printed text satisfactorily.

² It is possible that this stanza represents the words of the Prince.

I have, my body, my soul, my youth, my life, I dedicate to thee' (335). Again she adds, 'Verily thou art crimson from my colour. Thou art a Rāja of noble family. But thy home is in Jambū-dvīpa, how didst thou learn of Sindhala? How did Çaṅkara teach thee this love' (336). Ratna replies, 'I did what Hirāmaṇi told me, and I became absorbed in thee' (337). She smiles and confesses that she fell into a like state with regard to him at Hirāmaṇi's words (338). * * * * Morning comes, then Ratna leaves her. The bridesmaids come and see Padmāvatī sleeping (345). They wake her. Her disarray (346). They laugh, and tease her about her disarray and ask how Ratna had treated her (347). She replies that she had learned that there is no one dearer than a husband and that her maiden fears were unfounded (348). She gives further particulars (349). They comment on her disordered condition (350). They run and tell her mother Queen Campāvati, that Padmāvatī is not well. 'She looketh withered, and her colour is gone.' Campāvati hearing this, knows what it means, and laughs. She goes with the tiring women to Padmāvatī, kisses and blesses her (351). The women sit round and commiserate Padmāvatī. 'The child is restless,' they say. 'The lotus bud is full of tenderness, and slender, and delicate is her waist. She is like the moon in eclipse, she who shone like the sun with a thousand rays.' They anoint and bathe her, and again she blooms like the full moon (352). They clothe her in beautiful garments (353).

Ratna Sēna appears in public. His friends who accompanied him from Citaur congratulate him (354). He replies and gets 16,000 Padmini girls, and gives them to his friends as wives (355).

Padmāvatī calls her companions, and gives them presents. They rejoice (356). She then goes to Mahādēva's temple and worships him (357).

Night approaches. The bride and 'bridegroom meet again. Amorous talk. He challenges a fight. She prepares the artillery of her eyes, and calls on him to fight with an equal. She is a Queen and he a Yōgi (358). He replies, 'I am a Yōgi who conquereth both in love and in war. I am both Hanumān and the god of love. A master of horses and of the lower lip. I wound my enemy with the sword, and thy heart also, &c., &c.' (359).

CANTO XXIV.

THE SIX SEASONS AND THE TWELVE MONTHS.

Spring (*Vasanta*) comes, a season of joy (360). The hot season (*Grīṣma*) (361). The rains (*Pāvāsa*) (362). The autumn (*Çarad*)

(363). The cool and dewy season (*Çiçira*) (364). The winter (*Haimaula*) (365).

Queen Nāgamatī, Ratna's deserted wife, in Citaur, laments her lonely lot (366). Her sad state (367). Her companions console her (368). The *Bārah Māsā*, *Aṣāḍha* (369), *Çrāvāṇa* (370), *Bhādra* (371), *Āçvina* (372), *Kārttika* (373), *Agrahāyana* (374), *Pauṣa* (375), *Māgha* (376), *Phālguna* (377), *Caitrā* (378), *Vaiṣākha* (379), *Jyaiṣṭha* (380). The year of Nāgamatī's torture again comes round with *Aṣāḍha* (381). Thus month by month she weeps throughout the year (382).

CANTO XXV.

NĀGAMATĪ'S MESSAGE.

Nāgamatī is distraught and wanders in the forest asking the birds for news of her husband (383). She tells the birds her woes (384). A bird named Vihangama¹ hears Nāgamatī's cries at night, and asks her what is the matter, she tells her woes. 'My husband hath become a Yōgi and gone to Siphala-dvipa. I get no news of him (385). I am dry and bare as a lute (naught but wood and strings, i. e., bones and muscles). Who will go and tell my husband (386)? O, tell Padmāvatī to let my husband return to me' (387). The woes of Ratna Sēna's mother Surasvatī (388).

Vihangama take the message to Siphala. The burning message parches all the country. He rests on a tree by the edge of the sea (389). Ratna Sēna is hunting in the forest, and turns to the tree. He ties his horse and sits down. He looks up, sees Vihangama, and asks his name and why he is black. The bird replies 'Two months ago I went to Jambu-dvipa, I saw a city called Citaur. How can I tell its misery. I am burnt black (390). The Rājā became a Yōgi and departed. The city became empty and dark. His Queen Nāgamatī is burnt by unhappy love. By this time she is probably burnt to ashes. The fire of her woe is consuming the universe, and I was burnt black then, and fled for my life' (391). Ratna Sēna tells who he is and asks for further news (392). Vihangama reproaches him (393), describes his mother's condition (394), and Nāgamatī's (395). The effects of Nāgamatī's sorrow on the outer world (396). The Rājā welcomes the bird, and asks it to come down to him. Vihangama refuses. He prefers freedom (397), and departs. Ratna goes home sorrowful and determines to return to Citaur (398). He is distraught and full of regrets (399).

¹ Vihangama, is also the name of an exercise (*mārga*) of Yōga. There is of course here (as throughout) the double meaning.

He sends his compliments to Gandharva Sēna (400). He goes to him and says that he has had news that Citaur is threatened by the Emperor of Delhi, and that his brother is also threatening it. He must go home (401). The court regrets his departure. He asks for a lucky day to be fixed for the departure (402). Padmāvati ineffectually remonstrates (403). Distress of her companions (404). She calls them and bids them farewell (405). Their lamentations (406). They counsel her to obey her husband (407).

CANTO XXVI.

THE ASTROLOGERS

The astrologers describe the luck of departures on the various week days (408). On what days of the month the unlucky Yōgini prohibits departure in certain directions (409). The lucky days of the lunar month (410). The signs of the zodiac (411). When the moon and stars are powerful on certain days (412). The Nakṣatras and Yōgas (413).

CANTO XXVII.

THE JOURNEY AND SHIPWRECK.

Padmāvati mounts her litter (414). She departs with Ratna. Her attendants and their glory. The king sends with Ratna valuable presents (415). Ratna, seeing all this wealth, becomes proud. The sea determines to ask for toll (416). The sea appears in person as a beggar, and asks for charity (417). Ratna angrily refuses. The sea threatens him (418).

Before they get half way across the sea, the wind rises. The ships lose their course (419). A sailor of Vibhiṣana, a frightful Rākṣasa, appears in the sea (420). He is delighted at seeing the ships out of command. 'These Padminis will be dainty morsels for Vibhiṣana.' He approaches the ship and asks what is the matter (421). Ratna calls him and asks him to show the way. He promises jewelry if he brings the ship safe to land (422). The Rākṣasa offers to conduct the ship to the Sētubandha, if he is given a present beforehand (423). The Rākṣasa takes the ship to where the bones of Mahirāvaṇa lie, in a great whirlpool. The ship revolves in it. The King calls out 'What are you doing? Here is the Sētubandha' (424). The Rākṣasa laughs. 'This is the city of Mahirāvaṇa. He used to bear the weight of the earth. When he died his bones remained here' (425). The ship is merged in the whirlpool. The elephants, horses, and men on board all sink. Carnivor

ous animals assemble. The Rākṣasa dances with delight, but at that moment a huge bird comes and carries him off. The ship is broken to pieces and Ratna and Padmāvatī are floated off in different directions, each clinging to a plank (426).

CANTO XXVIII.

THE SEA AND LAKṢMĪ.

Padmāvatī is borne fainting away. Lakṣmī, the daughter of the Ocean was sporting with her friends on the sea-shore, and just then the plank with Padmāvatī was thrown up by the waves. They go up to look at her (427). Lakṣmī sees the 36 auspicious marks on her, and takes measures to bring her to life. She takes Padmāvatī's head in her lap, and has her fanned. Consciousness returns. They give her water. Then Lakṣmī kindly asks about her troubles, and who she is (428). Padmāvatī opens her eyes. Asks where she is, and who they are. Where is her husband? (429). They say they do not know. They had found her thrown up by the sea. Gradually memory comes to her. She is almost mad with sorrow (430). Her lamentations. She wishes to become *Salī* (431). She uncovers her head to become *Salī*.¹ Her grief (432). Lakṣmī tries to console her. Promises that her father (the Ocean) will watch at every landing place for her husband. Lakṣmī goes to her father and entreats him to bring the husband and wife together (433).

Ratna Sēna is thrown ashore at a high mountain. He ascends it and sees no one. When he thinks of his lost wealth he strikes his beard and weeps. 'Where is Padmāvatī? I have been lost through my egoism (434). Where is Padmāvatī (or wisdom)? I will search for her till I find her (435). Where am I to go to find her? (436). He addresses God (Gosāī, the creator). God's might (437). 'Let me die, murmuring Padmāvatī's name, unless thou seest good to reunite us. Yet I fear another separation, if we do meet again' (438). So saying he walks into the sea, and prepares to plunge his dagger into his neck. The Ocean (seeing that his egoism has diminished) approaches him as the form of a Brāhmaṇa. He blesses Ratna and asks for his story. Warns him that suicide is a sin (439). Ratna tells his condition. He owned Padmāvatī and wealth, and has now lost all in the sea (440). The Ocean smiles, and says, 'It is all the fruit of thine egoism. Had all this been really thine, thou wouldst have it still. All is illusion. Everything

¹ To allow the flames to burst forth. A true *anti* dies of spontaneous combustion. That is a general belief of even educated men at the present day in Bihār.

belongeth to Him who gave them. If he take them back, why dost thou lament?' (441). Ratna,—‘I care for naught except Padmāvati. The sea hath taken her, and I will go to heaven and complain of the injustice’ (442). The Ocean,—‘Be brave like Rāma, and thou wilt find thy Sitā. Close thine eyes, and I will bring thee to Padmāvati’ Ratna complies, and immediately the Ocean takes him to where Padmāvati is (443). Padmāvati’s sorrow (444). Lakṣmī takes the form of Padmāvati and waits at the landing-place by which Ratna is coming. Ratna seeing her runs to her, but discovers it is not Padmāvati, and turns from her. Lakṣmī runs to him weeping ‘Why art thou deserting me, my husband?’ (445). Ratna says, ‘I know thou art not Padmāvati. Thou art like the jasmine, but hast not the scent’¹ (447). Lakṣmī smiles and offers to conduct him to the jasmine. She brings him to Padmāvati. To Padmāvati, she says, ‘Drink, O weary lotus. Thy sun who was hidden in the sea hath risen’ To Ratna she says, ‘Lo, I have brought the bee to the jasmine’ (448). The meeting (449). The same (450). Padmāvati asks Lakṣmī to restore also all their companions, followers, and property. Lakṣmī goes to her father and gets the request granted. The companions, followers, and property are all returned (451). The Ocean also gives them presents of many precious jewels (452).

CANTO XXIX.

THE RETURN TO CĪTAUR.

They remain ten days as guests of the Ocean, and then take leave. The Ocean gives Ratna five priceless jewels (*naga*), viz, *Amṛita* (ambrosia), *Haṁṣa* (the swan), *Simurgh* (the father of all birds), the Young Lion, and the Philosopher’s stone². They mount on horseback, and set out escorted by a merman (*jala-manusa*), after bidding farewell to the Ocean’s wife. The merman conducts them to Jagannāth (453). They worship at Jagannāth and spend all their money there. The King’s reflections to Padmāvati on the necessity of money (454). Padmāvati says that Lakṣmī gave her at starting a betel leaf in which a number of jewels were wrapped up. He should sell one of these and put himself in funds. Ratna collects his followers and starts for home (455). They approach Cītaur (456). Their feelings after the long absence (457).

¹ 446 is missing in Rām Jagan’s edition.

² These five mystic jewels, the translation of which, it will be seen, presents some difficulty, have a prominent part in the story, vide 600, 626, 672.

Nāgamatī hears of the king's approach. Her happiness. She adorns herself. Her companions ask her why she is so happy (458). She explains. A herald comes and proclaims the arrival of the King (459). The general rejoicings in the city. Ratna's brothers ride out to meet him (460). Music. Ratna arrives and greets his mother. The temples are adorned. Padmāvati's litter arrives. Nāgamatī's jealousy; so Padmāvati is taken to a separate palace. The news about Padmāvati spreads abroad (461). Ratna mounts the throne. Charity distributed. He embraces his brothers and relations, and makes them presents. Music. Holy men of all sects assemble (262).

At nightfall Ratna visits Nāgamatī; filled with jealousy of Padmāvati, she sits with her face turned away from him. She reproaches him (463). He comforts her. Says he still loves her. He embraces her (464). She is consoled; laughs, and asks what kind of women he met in his travels. 'Is Padmāvati as beautiful as I am? Bees wander from flower to flower.' He explains that he cannot compare the two. There he loves one, here he loves another (465). Night passes in conversation. In the morning he goes to Padmāvati. She reproaches him for deserting her for Nāgamatī (466). He says he loves her alone. She tells him he should not go to Nāgamatī (467).

CANTO XXX.

THE RIVAL QUEENS.

The beauty of Nāgamatī's garden. She goes into it with her companions (468). Padmāvati is told of this, 'Nāgamatī is in the garden and the king is sporting with her and her companions' (469). Padmāvati cannot contain her wrath. She hastens to the garden with her companions. She meets her co-wife, they smile and sit down together on the same seat, with sweet words, but hatred in their hearts. Padmāvati remarks on the beauty of the garden, and adds that it is not right that the Sngādhraṇ flower should be in the same garden with the jasmine and the Nāgēsar. Who cares for Jāmun fruit if the Mango grows with it in the same garden (470)? Nāgamatī replies, 'That fruit is the best which the bee loveth. The Jāmun, the Kastūri, and the Cōā fruits are (it is true) all black, (but still they are the best). The mango is set on high but it weepeth in its heart out of jealousy of them, for the bee loves them and not the mango. So doth the bee love the black Jāmun that he hath planted it in the midst of his garden' (471). Padmāvati replies that the shrubs in her garden may be thorny, but

the fruit is not so bitter as in Nāgamatī's. In the latter there are no oranges or vines, and so on. 'Remain in thine own garden and do not fight with me. There is no flower equal to the jasmine' (472). Nāgamatī praises the fruits of her own garden. 'When a tree bears fruit, people throw clods at it. When a tree bends humbly down, it is because of the weight of its fruit. I am beautiful, may she who separated me from my love be burnt to ashes. My love is a Rājā, thine is a Yōgi' (473). Padmāvatī,—'I am a perfect lotus. I was created to be worshipped. Thou art the snake (*nāga*) of the world, to every one. Thou art dark-featured. Thou art a black bird, and I a swan. I am a pearl-broidered, and thou art a glass-bead-broidered bodice. Thou art an emerald dulled by being beside a diamond. Thou art eclipse, and I the moon. A dark night is not equal to the day' (474). Nāgamatī,—Thou art hard within, like a lotus. Thou spendest thy night lamenting thy husband's absence' (475). Padmāvatī,—'I am the lotus beloved of the sun. My heart expandeth when he shineth; while thou, gazing regretfully at the sky, art dried and burnt up. He and I are all in all to each other. Thou art like a wild fig full of flies, whose wings are born, but when it is time for them to die. Thou art a *nāgin* (snake) whose bite is mortal' (476). Nāgamatī,—'A lotus bloometh when the sun riseth, but its roots, if touched, foul the water. It grows in stinking slime, and its companions are fish and frogs and turtles. If it be washed a thousand times it will still stink. What shall I say to that beloved who has put coals of fire on my head? In the hope of sport with him, thou hast won and I have lost' (477). Padmāvatī,—'Yes, I have won all the charms of the world, my face from the moon, my hair from the black snake, my eyes from the deer, my throat from the voice of the koil, &c. To my form I gave the fragrance of Malaya. Thou art envious of me' (478). Nāgamatī,—'Why art thou proud of charms borrowed from others. I am dark with brilliant eyes, my face is fair, and my voice is like the cātaka's, my nose is like a sword, my brow like a bow, &c.' (479). Padmāvatī unable to bear any longer cries, 'Nāgamatī, thou snake, speak no more.' Then each speaks at the same time. They scream and fight like nymphs wrestling. Each holds the other's arms; bosom to bosom, neither turns back. In vain each tries to bring the other down. No one dares to interfere (480).

The wind whispers in Ratna's ears what is going on. He hastens there and remonstrates. 'Do ye not understand that sometimes it is night, and sometimes day? Ye are like the Ganges and the Jamunā' (481). The two wives embrace. He takes them into the palace and feeds them. He gives Nāgamatī a golden palace, and Padmāvatī a

silver one. They live happily (482). In due course Nāgamati has a son, named Naga Sēna, and Padmāvati a son called Kamala Sēna. Astrologers prophesy that both will be great *rājās*. They are richly rewarded (483).

CANTO XXXI.

RĀGHAVA CAITANYA.

Amongst the paṇḍits attached to Ratna Sēna's court was one Rāghava Caitanya. He is the wisest of them all (484). Every one has his unlucky moment. One day when it was the first day of the new moon, the king asks when the second of the lunar month would come. Rāghava, by a slip of the tongue says 'to-day.' All the other paṇḍits say 'to-morrow.' Piqued, he adheres to his statement, and, by force of magic, when evening comes, makes the moon appear as if it was the moon of the second day (485). The paṇḍits disgusted. Next day comes, and, behold, the moon is again the moon of the second. They accuse him of being a wizard (486). Ratna in a rage orders Rāghava to be expelled from the country as a wizard (487). Padmāvati hears of this, and by her fore-knowledge perceives that the expulsion will lead to calamity. She sends for Rāghava to the foot of the palace. A Brāhman will go anywhere for hope of a reward, *in calum jusseris ibit*.¹ He comes there (488). Padmāvati appears at the lattice above, like a spotless moon. Rāghava blesses her. She gives him a bracelet. As she does so the string of her necklace breaks, and the stones of it also fall. Rāghava, startled by her glory and the jewels, falls senseless (489). Padmāvati smiles and tells her maidens to revive him. They take him to the shade, and ask him what ails him (490). Rāghava comes to himself with difficulty, and casts his eyes towards the lattice. He speaks incoherently of having been robbed. 'When Padmāvati looked at me, it was like a *ṭhaḡ's* poisoned sweetmeat' (491). He tells how he has been stricken by Padmāvati's eyes (492). The maidens conclude that he has gone mad. They admonish him, and say that many men have been struck senseless by Padmāvati's beauty, but she is unattainable (493). He comes to himself. He determines to profit by what he has seen. 'I will try and earn another bracelet. The Turk has come to Delhi,—Shāh 'Alān'd-dīn, the Emperor. In his mint gold is melted and twelve kinds of dinārs are made. To him will I describe the lotus, and he will come and be the sun to it' (494).

¹ *Svarga jāe jō hōe bolāncā.*

CANTO XXXII.

RĀGHAVA'S JOURNEY TO DELHI.

Rāghava starts for Delhi. He reaches the door of the Emperor's court. Can get no admission, and is in danger of being trampled to death by the crowds of horses (485). The Emperor knew all that was going on. He hears that a Brāhman beggar is standing at his gate with a bracelet in his hand (486). He sends for Rāghava. He has pity on foreigners. He also has been one (497). Rāghava appears. The Emperor asks, 'Why dost thou beg when possessed of such a bracelet?' He replies that Ratna Sēna has a lovely Padmini of Sindhala-dvīpa, for his wife, in Citaur. 'She is beauteous as the moon. She appeared at the lattice, gave me this bracelet for a reward, and took away my life' (498). The Emperor laughs and does not believe him. 'Thou art praising up a piece of glass. Where is this matchless lady? I have sixteen hundred, and, if there is a perfectly beautiful lady anywhere, she is in my palace' (499). Rāghava replies,—'Thou art an emperor, and I a beggar. I have travelled East and West, North and South, but there are four things that thou hast not got, the Padmini, Amṛita, Haṃṣa, and the lion's cub.¹ I have travelled far and wide and if I am ordered, I will describe the four kinds of women, the Hastinī, the Sindhinī, the Citriṇī, and the Padmini (500).

CANTO XXXIII.

THE TALE OF FAIR WOMEN.

Description of the Hastinī (501), the Sindhinī (502), the Citriṇī (503). General account of the Padmini (504). Further particulars (505). Such is the Padmini who has come to Citaur (506). The dangers of her beauty (507). The lightning of her smile (508). Her raven locks (509). The parting of her hair (510). Her brow (511). her eyebrows (512), her eyes (513), her nose (514), her lips (515), her teeth (516), her voice (517), her ear (518), her cheek (519), her neck (520), her arms (521), her bosom (522), her gait (523), her delicate grace (524).

The Emperor is struck senseless by this description of Padmāvatī's beauty. He becomes enamoured of her, and asks Rāghava once more to tell him about Citaur and the Padmini (525). Rāghava says that beside her there are five other jewels in Citaur,² and describes them (526). The Emperor richly rewards Rāghava, giving him not only elephants and horses, but a pair to the bracelet, in which were fixed

¹ See 453.² See 453 and 500.

thirty crores worth of jewels. He promises Rāghava the throne of Citaur on the day on which he obtains possession of Padmāvati. 'I will first take the five jewels and then her.' He calls Sur'jā the wrestler,¹ and gives him a letter to take quickly to the king of Citaur-fort. The king (Ratna) receives the letter which, after the usual polite expressions, runs, 'Send me, quickly, the Padmini of Siphala-dvīpa' (527).

CANTO XXXIV.

THE WAR BETWEEN THE KING AND THE EMPEROR.

Ratna's rage on hearing the letter read. He will not kill Sur'jā for the insult. 'A thirst which the sea cannot extinguish is not affected by a little dew' (528). Sur'jā replies,—'I am come here prepared to die. The Emperor sent me knowing this. Beware of his power. He can destroy thee if he will. Citaur existeth but by his favour. If thou wilt give the Padminī, thou may'st keep Citaur, and will be given Candēri in addition' (529). King,—'If my wife go, what is Citaur, and what Candēri? I am ready to fight like Hammira, of Rān'thambhaur; like Hanumān, or Rāma Candra. I have founded an era, like Vikrama. If the Emperor want money, I will give it him; but if he wish a Padminī, let him go to Siphala-dvīpa, and fetch one' (530). Sur'jā,—'Boast not, O king! All the earth boweth before the Emperor. If he wish to go to Siphala, he can, but the day he besieges thy fort, he will take all that thou dost possess. Be advised in time' (531)! King,—'Go and tell the Turk not to run hither to his death, like Alexander, who hastened to the Kajuli forest for ambrosia, but obtained naught but regrets. My fort is strong. Let him come to attack it when he wisheth' (532). Sur'jā returns to the Emperor, and reports. The King refuses to listen. The Sultan's rage. He declares he will destroy Citaur like Rān'thambhaur (533).

He sends out letters in all directions, and calls his nobles. The countless army which assembles (the stock similes) (534). Enumeration of the various kinds of horses (535). The elephants (536). The nobles, and the various countries they come from (537). The equipment. They march (538). The terror inspired in the various citadels on the way (539). Only two citadels stand firm, Citaur and Kam-bhal'nār.² Ratna hears of the approach of the Turk. He sends letters to all Hindū Rājās,—'Citaur, the holy place of Hindūs, is being attacked by Turks. The sea is in flood and there is no embankment.

¹ See 632.

² This fort plays a prominent part in the poem subsequently; see 628 and 2.

I alone am the dyke. Help it, for your own sakes, otherwise he will attack you all. As long as the dyke remaineth standing, it is well, but once it is breached, the flood cannot be stopped. The betel¹ is ready.' (540). A similar message is sent by Ratna to the Hindū-Rājās who are bound by feudal ties to the Emperor. They meet and approach the Emperor, saying, 'Citaur is the mother of the Hindūs, nor can we forget the relationship, even though it cause us peril. Ratna Sēna is ready to sacrifice himself, and he is the greatest King amongst the Hindūs. Be friendly and forgive him, or else give us betel as a token that we may depart. Then will we go and die, that the name of our honour be not wiped out.' The Emperor gives them leave to go, and three days' law (541). Ratna Sēna puts Citaur in battle array. The kings come and salute him. Enumeration of Rāj'pūt tribes. They are ready to fight to the death (542). The citadel is provisioned for a seven years' siege. A strong moat is dug zig-zag round it. Range over range of cannon. The battlements crowded with warriors, &c. (543).

The Emperor marches. Description of the effect of the cavalry and elephants (544). The cannon (545). Comparison of a cannon with a lovely woman (546). The progress of the elephants (547). Further description of the progress of the elephants. The dust raised made the world dark as the Kajali forest, when Alexander went to it (548). The dust and consequent darkness (549).

The army approaches Citaur. Ratna and his generals mount the battlements to see it, but its rear reaches so far as to be invisible. The Queen ascends to the roof of the palace, crying, 'Lucky am I in having a king, against whom the Turks have had to raise such an army' (550). Ratna is undismayed at the sight. He and his friends prepare for a sally of cavalry (551). Description of Ratna's steed (552), and of the royal elephants (553). The cavalry and elephants are ready for the fray. In front are the chariots, and in the rear are the death-flags, behind which there is no retreat. The army sallies forth (554). The two armies meet in conflict (555).

CANTO XXXV.

THE TRUCE.

Description of the elephants fighting (556). The hand-to-hand fight (557). The terrific combat. Delight of ghouls (558).² The Emperor urges on more soldiers to meet the ever-advancing Hindūs

¹ Taken by a hero before going on a desperate fight.

² Throughout the following the King and his army are compared to the moon, and the Emperor and his army to the sun.

(559). The Rāj'pūts are beaten back by the Emperor's troops, as a lily closes before the sun (560). The Emperor attacks the fort in the day time (561). By night, the 'Moon' (i. e., the Rāja) rises, and fires blazing bombs at the enemy, which cannot be withstood (562). At day-break, the 'Sun' (the Emperor) again comes forth, and attacks the citadel. The fight lasts the whole day, without result, and so affairs go on day by day (563). The Emperor lays a mine, and bombards the fort. His artillery is officered by Abyssinians (*Habshī*), Greeks (*Rūmī*), and Portuguese (*Firaygi*). The mine explodes (564). The confusion which arises and the damage done in the fort (565). The King, so far from being dismayed, makes arrangements for a dancing entertainment, in full view of the Emperor. Catalogue of the musical instruments. Every device of joy is there; five nautch girls dance. While the Emperor is besieging the fort, the king is diverting himself with a nautch (566). Description of the songs. High up on the fort the dance proceeds, while below the Turks fire off their cannon, as their generals watch the entertainment, rubbing their hands, beating their heads, and crying, 'When will these fall into our hands?' (567). The Dancers (568). In the course of the dance, one of the dancing girls turns her back towards where the Emperor is sitting, down below. The Emperor is angry at the insult. He orders arrows to be fired, and the arrow fired by Jahāngir, Rājā of Kannauj, strikes the girl, and she is killed. The nautch is stopped. The Turks below applaud the shot (569). The King's people build ramparts of earth and repair the damage caused by the explosion (570). They make preparations for performing *Jūnhar*, if the worst comes to the worst (571).

The siege goes on for eight years. Trees planted by the Emperor grow up and bear fruit. He becomes weary of his task. Just then news comes that, 'Harāwā,¹ the Lord of the West, who used to fly before thee, has now stood up to face thee. He whose face was in the ground has raised his head to heaven crying, "The Emperor is safe fastened at Citaur"' (572). Hearing this, the Emperor meditates, and determines to take Ratna by treachery. He sends Sur'jā, telling him to go to the king and speak gently to him: say, 'I will not take the Padminī. If I am but allowed to see her, I will raise the siege. Take Nehicala and Candēri, in addition to thine own dominions, and only give me the five jewels² which the sea gave thee' (573). Sur'jā goes to the king, and commences by explaining that the Emperor has him like a bird in a cage, and can crush him at any moment, as he did Hammira (574). The king replies, 'I am not an era-maker like Hammira, like Bhoja, or

¹ By tradition, Harāwā is said to have been a noted *shag* chief.

² See 453.

Vikrama. But still we have withstood the siege for seven years, and have no want of food. There is also a plentiful natural spring of water. We are still ready to fight, and are still prepared, if need be, to die' (575). Sur'jā,—O king, he who disobeyeth the Emperor must finally be destroyed,' and so on. 'Thy fort is on the point of crumbling, take heed to what I say if thou would'st escape. Let him see thy five jewels. If his soul is pleased with one, he will forgive all thy wickedness' (576). King,—The Emperor is my elder (or superior). He can forgive me and do what he wisheth. What are my five jewels? My whole treasury is his. Can Darius cope with Alexander? What thou hast said, I humbly accept, but I will not be satisfied without an oath.' Sur'jā takes the oath with intent to act treacherously, and the king accepts it and summons a herald (577), to whom he makes over the five jewels, and despatches him to the Emperor, with this message,—'O, sun of the world! light of the earth! the black crow boweth himself humbly before thee. Thy glorious light illumineth the world. Nothing in the nine continents is hid from thee. Anger and mercy are both at thy service, thou killest in thy fierce sunshine, and revivest in thy shadow. Let not the Sun be angry with the Moon, who is eclipsed, and confined in a cage. To-morrow morn, the crow will humbly approach thee' (578). When the herald finishes his message, the Emperor replies. He reproaches Ratna for disobedience. This disobedience has made the crow's feathers black (579). 'Go tell the king that, if he is true, there is no fear. He who trusteth himself to me is safe from harm. To-morrow the Sun, (i.e. the Emperor) will visit the fort, that thou may'st lay thine arms before him.' The Herald, taking the betel of friendship, returns to the king, and gives the Emperor's message. The King immediately orders preparations to be made for a feast for the Emperor (580).

CANTO XXXVI.

THE FEAST TO THE EMPEROR.

Description of the animals and fowl brought for the feast (581), the fish (582), the wheat and cakes (583), the rice (584), the spices for the meat (585). The pasties and fruit (586). The way the fish are cooked (587). How the vegetables are cooked (588). The pulse-meal cakes (*barsā*) (589). The sweetmeats (590). Everything that is above-mentioned has first to be treated with water before cooking. Praise of water (591).

They spend the night in cooking. In the morning the Emperor comes, preceded by Rāghava Caitanya (592).

CANTO XXXVII.

THE EMPEROR'S VISIT TO THE FORT.

Description of the seven-storied palace. The King meets the Emperor at the gate. The Emperor admires the fort (593). Beauty of the palace. Its gardens and temples (594). The Emperor, looking round, notices Padmāvatī's palace. Its beauty, and the way in which it is guarded (595). He arrives at the seventh story. Its magnificence, with its wonderful mirrors. The Emperor is seated on a magnificent throne amidst the mirrors. But he thinks most of all of Padmāvatī (596), who however is not visible. The King's hospitality. The Emperor converses with the king, but his soul longs for Padmāvatī (597).

Gōrā and Bādāl¹ suspect the Emperor, and whisper to Ratna that they fear treachery (598). Ratna refuses to believe them, especially as treachery always recoils on itself. Witness the Pāṇḍavas and the Kauravas (599).

The King has 1,600 women slaves, out of whom he selects 84, whom he produces before the Emperor. They all use the artillery of their eyes upon him. He asks Rāghava, which of them is Padmāvatī (600). Rāghava replies,—‘These are only her maidservants. These are merely the pearls which set off the diamond. As long as you look upwards (towards the lattice windows of the female apartments), she will not look up.’ The Emperor immediately ceases looking up, ‘A guest has no right to do so. I will act like Arjuna, and succeed with a reflection in a mirror’ (601). He is served with food by damsels beauteous as Indira's nymphs (602). He cannot eat (603) or drink, ‘I would drink with mine eyes, and not with my tongue’ (604). The meal being over, the king waits upon the emperor, offers him trays of jewels, and asks for forgiveness, and that the sun of the Emperor's kindness may shine upon him (605). The Emperor expresses himself pleased, tells him to retain his own country, and to have the land of *Mārō* in addition. He leans upon the King's shoulder, so that, deceiving him by a show of affection, he may capture him by fraud (606). The Emperor sits down to a game of chess with the King, first arranging a mirror on the wall so that it may reflect the lattice window of the female apartments. He sits facing the mirror. The game of chess described metaphorically (607).

The maidens who had served the Emperor go to Padmāvatī, &c.

¹ See 656.

scribe him to her, and advise her to look at him, or she will miss a sight she will not have a chance of seeing again (608). She goes to the lattice and looks out, and the Emperor sees her reflection in the mirror. He who has been desiring a castle (*rukh*) in the game of chess, is checkmated when he sees Padmāvatī's face (*rukh*). He falls into a stupor. The king, not knowing the reason, expresses concern. Rāghava says he is only overcome by the betel nut,¹ and has him put to bed. Night passes. The Emperor comes to himself in the morning (609). Padmāvatī has disappeared, and the Emperor rises, looking like a *Yōgi*. Rāghava goes to him, saying,—‘Hath the lotus become poison, when it saw the sun? Thou art all-powerful. Why art thou so distraught?’ (610). Emperor,—‘I have seen a wondrous vision. A curtain which had been before my eyes was raised. I saw in my mind a lake, in which water had been, and was no longer. Heaven came down and covered the earth. It came upon the earth but I could not grasp it. Again I saw in it a lofty temple. It was within reach of my hand but I could not touch it. In it, I saw, in my mind, an image, but it appeared without body and without life. It was bright as the full-moon, but, like the philosopher's stone, it showed itself and disappeared. Now my life is where that full moon is. How can the sun find the new moon? The lotus bloomed at night, like a flash of lightning (611). That beauteous form hath entered into my soul and dragged out my life. I saw a lion's waist, the might of an elephant, snakes for the elephant goad, and a peacock for its rider. Over it was a lotus blooming, round which bees hovered and drank the odour. Two fluttering *Khañjan* birds, between which sat a parrot, while a two-days-old moon rose with a bow in its hand. A deer appeared and then became invisible. The moon became a snake, and the sun a lamp. I saw it very high, and then start away. Mine eyes followed it, but I could not reach it. While I gazed at it, it faded away. It went, as I gazed and meditated on it’ (612). Rāghava explains the vision. ‘The wondrous form which thou didst see was certainly Padmāvatī. She hath a little waist like a tiger's, and her gait is that of an elephant. Her neck is graceful as a peacock's, and her hair (brilliant as the lamp of the sun) resembleth black curling snakes. Her face was the lotus, exhaling gentle odour to the Zephyr, the fluttering *khañjans* were her eyes, and the parrot her nose. The bow is her eyebrows, and the two-day moon her brow. She is that deer which appeared and became invisible, whose looks are like black snakes, and whose soul is a lamp. Thou did'st see her reflection in the mirror, and therefore the image which thou did'st

¹ The Area nut eaten with betel sometimes causes faintness. The idiom used for it is *sāpāri lag gai hai*.

see had no life within it. Now take thought and act. He tasteth the fragrance of those locks on whose lips they fall' (613).¹

CANTO XXXVIII.

THE CAPTURE OF THE KING.

The Emperor asks for his litter, and starts on his return to the camp. The King, delighted at his kindly words sees him off, and heedlessly accompanies him part of the way. The Emperor, conversing with the King, leans his hand upon his shoulder in a friendly way, and uses words which are sweet in the mouth, but poison in the belly (614). As the Emperor passes Padmāvatī's palace, she is filled with forebodings. As they pass the first palace, the Emperor gives the King a robe of honour, a hundred horses, thirty elephants, a kettle-drum, and a spice vessel.² As they pass the second palace, he gives cavalry; at the third, costly jewels; at the fourth, 10 millions of money; at the fifth, two pairs of diamonds, at the sixth he gives the kingdom of Mārā, and at the seventh that of Candērī; and when they pass the seventh gate, he has the King seized and carried off a prisoner (615).

Reflections of the poet. There are many waters in this world. Some men cross them and some sink. Some are blind, and cannot see the fire in the way, and others can see clearly and cleverly. To the King success became a disease, for he left heaven and fell down to earth. Why should he have trusted an enemy whom he had released after having him in his grasp,—and so on. A cruel lesson on imprudence is it to the King (616).

They load the King with fetters, and put him in a cage. The news reaches Citaur, and spreads over the country. Lamentation of the people. 'To-day the sun is set and Citaur is in darkness' (617). The cry is 'the Musalmān has conquered the Hindū.' The Emperor marches off with the King. The moral effect of the capture on the whole of India. All tremble, and become submissive to him. He returns to Delhi. All those who had rebelled, again submit (618). The cruelties of the King's imprisonment. He is taunted and beaten if he asks but for water. Burning, in want of water, he falls asleep, and wakes

¹ I have given a more full translation of these three verses than usual, as they are of some importance for following the plot. The passage, as printed, is, however, very corrupt, and the details cannot be accepted as correct.

² A *caughari*, is a silver or gold jewelled case in four (or more) compartments for holding cardamoms, otto of roses, cloves and the like, when presenting *shish* to a guest.

in the morning after dreaming of oceans (619). They continue taunting him about his disobedience, and tell him his only chance of success is to send for Padmāvati if he wishes to escape (620). He gives no reply, and prepares for death. Description of his ill treatment (621).

Padmāvati's anxiety about her husband's continued absence. She can get no news of him. Her sorrow (622). Her lamentations for her absent husband (623). The same continued (624). Nāgamati's sorrow (625, 626, 627).

CANTO XXXIX.

KUMODINĪ.

Rājā Dēva Pāla of Kambhal'nēr,¹ a bitter enemy of Ratna Sēna, hears of his imprisonment, and determines to try and get Padmāvati into his power. He sends for an old bawd named Kumōdinī, a Brāhmaṇī by caste, and gives her a betel *bīrā*,² telling her to go to Citaur and by force, or fraud, to bring Padmāvati to him (628). She is ready to go, and boasts of the power of her charms and incantations (629). She fills a basket with cakes, and starts for Citaur (630). She arrives at Citaur, and after reciting her incantations goes into the palace, finds Padmāvati's apartments, and takes the cakes to her. As she enters, she opens her arms, but Padmāvati does not recognize her. Then she cries. 'Thou and I were born in the same town. My father's name was Bēnī Dūbē, Gandharva Sēna's private priest. When thou wast a child in Siphala Dvīpa, I used to give thee milk to drink. I have made a second home in Kambhal'nēr, and hearing that thou art in Citaur, I have come to see thee' (631). When Padmāvati hears the name of her father's house, she falls on the old woman's neck and weeps. She laments fate. 'Why did my parents give me this unhappy lot by marrying me, and giving me a husband who hath been imprisoned? I wish to die, but my shameless life doth not abandon me' (632). Kumōdinī embraces her and weeps, and washes Padmāvati's face. Consoles her. 'Who can wipe out what is written on the forehead?' Padmāvati gives no reply, and remains unconsoled (633). Kumōdinī uncovers the trays of sweetmeats, but Padmāvati will not eat them. She refuses even to touch them (634). Kumōdinī stays. She proffers further consolation. 'Thou art still a young lotus. Thou art still in thy tender youth. Why wear these unbecoming weeds of

¹ See 540, Note 2.

² Offered to a person entrusted with a dangerous mission, and accepted by him or her.

sorrow. Adorn thyself. Sit upon thy throne, and sport. Enjoyment is but for a few days, and youth once gone doth not return' (635). Padmāvati refuses comfort. 'She hath youth who is in the shadow of her husband's face. The jasmine of my body will take new shoots, when the lord of the house, its waterer, returneth. Till then it will remain withered' (636). Kumōdini,—'Think not thus of life. As long as there is youth there are lovers. No husband is ever constant. Youth, like water, diminisheth day by day, and birds only seek the pond while it containeth water' (637). Padmāvati,—'What is life and youth without a husband. She who is wedded to a lion desireth not a jackal. The true beauty is chastity. Sin maketh the most lovely to be black' (638). Kumōdini,—'Old age will come. It will then be too late for joy. Thy beauty will all disappear; now is the time for happiness' (639). Padmāvati flames up. 'May her beauty be burnt up, who deserteth her own, and lusteth for another. Two kings cannot sit on one throne. Youth may go, and lovers may go, but not the memory of my husband's love. If we meet not in this world, we will meet hereafter. I am sinner enough as it is, for I still live' (640). Kumōdini,—'No taste is appreciated till a new taste cometh on the tongue. Thou hast not learned the taste of another man. They only know the taste of the first, who have tried another. One sip of nectar filleth not the heart, till another hath been drunk' (641). Padmāvati. 'Thou art my enemy, not my nurse: with inky words hast thou come to cheat me. Water is clean till ink falleth into it. The very moon would become black if defiled with such ink. Thou art insulting me with a smile upon thy mouth. My husband (*çyāma*)-lover is brilliant as the sun, other lovers are black (*çyāma*) as ink'¹ (642). Kumōdini,—'Thou hast already black ink upon thee,—I see it in the blackness of thine eyes. Nay, black collyrium is adornment; so also is the black mole on the cheek. A line of ink giveth an enhanced charm. The pupils of the eye are black, and the whole world is seen by them, and so on. How can there be whiteness where there is no black? How can there be a body, when there is no reflection? Dēva Pāla is an all-powerful king. Thou wilt forget Citaur, when thou hast gone to Kambhal'nēr' (643). Padmāvati bends her brows in wrath. 'Dēva Pāla is my husband's foe. How paltry is the bear compared to the lion; and, lo! a harlot is telling me a love-message from him. Were my lord here he would cut thy nose, and ears, and paint thy face black. He would shave thy head, and mount thee on an ass' (644).

¹ So the printed editions. The original was probably a pun, or corrupted form of *svāmī* and *çyāma*.

CANTO XL.

THE FALSE YŌGINĪ.

Padmāvatī founds a Dharma-çālā, in the hope of earning the release of the king. To every traveller who resorts to it, she gives food and water. From all she asks for news of her husband. The Emperor, hearing of this, sends for a harlot, clever in acting. He dresses her like a Yŏginī, and sends her to Citaur with instructions to persuade Padmāvatī to become a Yŏginī, and to bring her to Delhi. She arrives at Citaur, dressed as a Yŏginī (645). She comes begging to the palace door. A maid-servant tells Padmāvatī of her. 'A Yŏginī is at the door, and beggeth like one who hath lost a beloved. Though still in her first youth, she is living in austerity. She hath torn her veil and hath put on the beggar's blanket. She hath the ashes of separation, and matted hair, a skin over her shoulder, and a rosary round her neck. Her voice is wild, and her very footsteps burn the earth' (646). Padmāvatī calls her, and asks her whence she has come. 'Why art thou so distraught?' 'My beloved hath gone to a far country, and for him am I become a Yŏginī. What are life and youth and body, when my love is gone? So I tore my veil and took the beggar's blanket. I wander everywhere and call for him. Though he dwelleth in my heart, he answereth not (647). I have wandered and wandered. I have gone to Banāras, to Gayā, to Jagannāth and Dwāraka, to Kedār-nātha and Ayōdhyā (648), to Gaumukha, Haridwāra, Nagarakōṭa, the *Ṭilā* of Bālanātha and Mathurā, to Suryakunḍa, Badarinātha, Rāmanātha, Gomatī, Gurudwār, Sētubandha, Sumēru, Alakāpura (the city of Kuvēra), Brahmāvarta, Bēnī Sangama (i. e., the Prayāga), Nilakanṭha, Miçrikha, Kurajāta, and Gōiakshanātha. I went as far east as Patna, but found not my beloved (649). I wandered everywhere. I saw the Turks at Delhi, and the prisoners of the Emperor. Amongst them I saw one Ratna Sēna, exposed to the sun and denied all shade. I saw other kings prisoners there, who, seeing me to be a Yŏginī, fell at my feet, (and implored me to release them). But what could I do. Delhi is not such an easy place. There is no escape from prison there. My body hath lost its soul in compassion at his suffering. How can she live whose husband is such a prisoner?' (650).

Padmāvatī learning that her husband is a prisoner, her grief is a hundred-fold intensified. It is like melted butter added to fire. She falls in horror at the Yŏginī's feet. 'Let me have thy feet, that I may lay my eyes upon them. O, take me where my husband is! Show him to me as thou hast seen him, and I will give my life to thee as a sacrifice, I will give thee all the rewards of my chastity and religious virtue,

if thou wilt only tell me of him. Thou art *Guru*, I am thy *cēti*. I was wandering in error and thou hast shown me the way. Wait for me but for a moment, that I may dress as a *Yōginī* and go with thee.' Her maidens advise her to restrain herself. A *Yōginī* cannot divulge her *Guru's* instructions (651). The maidens (suspecting the falseness of the *Yōginī*, continue to her). 'Take alms *Yōginī*, and go.' Then, to *Padmāvatī*, 'Thou wilt not find thy love with such trivial deception. Remain at home till thy husband returneth. Let thy austerity be to remain at home. Instead of thy ascetic's vessel, wear thy modest veil, and for thy ascetic's horn, take thy sighs. For thy matted locks, bear the pangs of separation,' and so on. 'Before going with this woman, first seek advice from *Gōrā* and *Bādal*' (652).

CANTO XLI.

THE COUNSEL OF *Gōrā* AND *Bādal*.

Taking the advice of her maidens, she herself runs on foot to *Gōrā*¹ and *Bādal's* palace. The two heroes come out to meet her. She refuses to be seated. They ask her why she comes in such haste on foot and in public (653). *Padmāvatī's* tears. Her distraught condition (654). 'Ye, *Gōrā* and *Bādal* are two pillars. No one is brave in the battle-field like ye. The creeper of separation hath become a tree, and overshadoweth the earth. Let me become a *Yōginī* and run thither where my love is a prisoner. Let me be bound, and let me release him' (655).

Gōrā and *Bādal* are greatly distressed. Say they, 'We were vexed with the king and warned him against entering into treaty with the Turk.² Our suspicions have been realized, but as long as we have life we will not retreat, nor should'st thou become a *Yōginī* while thy husband liveth. Be of good cheer. The star *Canopus*³ is risen, and the *Hathiyā* asterism roars. The waters abate, the king will surely return. The rains are over and *Canopus* appeareth. We will saddle and away. We will smite the demon of eclipse and release the sun, and no root or sprout of grief will remain' (656). *Padmāvatī* gives *Gōrā* and *Bādal* the betel, exclaiming, 'To what can I compare you? Ye are like *Hanumān* and *Angada*, like *Arjuna* and *Bhīma*,' and so on. 'As *Hanumān* served *Rāghava*, so do ye the king; as *Bhīma* showed valour in the burning lac house, risking his life for others when he dragged the blazing beam, so do ye' (657). Ye are *Rāma* and *Lakṣ-*

¹ *Gōrā* was *Padmāvatī's* uncle and *Bādal* her nephew.

² See 598.

³ *J. c.*, Autumn, when Kings go out to fight. The '*Vikrama* *Śukla*.'

maṇa, Drōṇa and Gāṅgēya,¹ Nakula and Sahadēva, Yudhiṣṭhira and Duryōdhana, Bhōja and Nala, Rāghava and Paraṇu Rāma, Bharata and Çatrughna, opponents of Kama and Cānura, Pradyumna and Aniruddha. Help me as Bhīma helped the Pāṇḍavas' (658). They take the betel, and tell Padmāvatī to call her litter and return home; she should not walk. She revives, and returns joyfully to her palace in a way consonant with her dignity (659).

CANTO XLII.

THE DEPARTURE OF GORĀ AND BĀDAL.

Yaçodā, the mother of Bādal, comes and clasps his feet; saying, 'Thou art but a child, what knowest thou of battle? Mighty kings who opposed the Emperor could not protect Hammira.' Description of the Emperor's power. 'Where great kings crash to ruin, what hast thou to do? To-day is the day for receiving thy bride home from her father's house. Remain at home and be happy' (660). Bādal,—'Mother, think not of me as a green boy. I am Bādal, the lion of battle. When a lion heareth a herd of elephants his soul is mightily moved, and his lion-racehood² cannot be hidden. I am ready to fight the Emperor alone. I would stand before a mad elephant unmoved, and tear its trunk and out-root its tusks. I will plant myself in the battle-field firm as Angada. Consider me not as a child. Where'er the king is imprisoned, there will I enter and release him, even if it be hell' (661). As Bādal equips himself for battle, the marriage procession of Bādal's bride approaches. The bride appears, moonfaced, and brave in all her finery. Her beauty. She laments when she hears of her husband's departure; 'As I arrive at my husband's gate, he departeth to a distant land.' Her bridesmaids try in vain to console her (662). She casts aside her veil, and stands humbly at the door. She casts a piercing glance at Bādal and gathers up her raiment, but her husband looks another way and hardens his heart. Then she smiles and looks towards him, but he turns his back to her. Turning his face away he is wroth, 'I will not walk towards the woman's face.' The bride wonders at his ill-omened conduct. She is too modest to address him (663). Then she considers, 'I have not gained my love by my modesty, let me cast it aside and address him?' She smiles and catches his waist-band, saying, 'A husband should not refuse his wife's request. To-day I am come for the first time from my father's house, and thou, my love, art going to the battle. I have left my home but to meet thee; what leaving home is that, when my lord leaves me?

¹ The grandfather of Bhīma.

² Rāj'pūta call themselves *Siṃha*, lion.

The bride hath not seen her beloved even one eye-full, and the beloved hath not yet met the bride once in ~~his~~ life. I am a lotus full of hope of union, and the bee who sippeth my nectar should not desert me. I lay my forehead at thy feet, (Hear me, my Lord), and, lo, now thy feet are bound in the tangles of my locks, so, how can'st thou leave me?' (664). Bādal,—‘Lady, loose my waist-band. When a husband goeth forth to war, his wife should never grasp it. ’Tis true, fair lady, that for thee to-day is thy starting for thy new home, but for me it is the starting for where my king is in prison. Till my king return free, heroism alone fills my soul, not love. Women and land are hand-maidens of the sword, whoso sword conquereth them, to him do they belong. In whoso house the sword is pulled from the fist of the wielder, there is there no virile power, no moustache nor beard. On my face hair has come, let me play with life for a stake, and earn heaven in my master’s service. The word of a man no’er turneth backwards, e’en as the tooth of an elephant, once grown, doth not return into his mouth. Thou art but a girl, O lady, and understandest not. He who fighteth understandeth. A man whose heart is full of war, careth not for love.’ (665). The bride replies,—‘If thou would’st fight, I have made preparations for a love conflict. My bosom have I made the van, and the army of love in wrath is routing the troops of separation. My heroism is the vermilion on my brow, like the red blood on a naked sword. My brow is a bow, and mine eyes provide the arrows,’ and so on. ‘First fight with me and then think of war’ (666). She is unsuccessful in her entreaties. She weeps, in vain (667).

CANTO-XLIII.

THE TALE OF GŌRĀ AND BĀDAL.

Gōrā and Bādal consult together. They determine to meet deceit with deceit. They will deal with the Emperor as he has done with them (668). They prepare 1,600 covered litters, and fill them with knights. They prepare one special litter to represent that of Padmāvatī, in which sits concealed a smith. They adorn it, and surround it with maidens with waving chowries. They cover the litters with jewelled covers. They accompany the litters, proclaiming that Padmāvatī is travelling. ‘The Queen is going to release the king, offering herself as a hostage. Thirty thousand horses is she taking, and sixteen hundred litters’ (669).

Gōrā goes to the jailor in whose charge the king is. He gives him 10 lakhs of rupees as a bribe and flatters him. ‘I supplicate the

Emperor. Padmāvatī is come, saying, "I am come humbly to Delhi with the keys of Citaur." She begs, that as she has the keys of the treasury with her, she may obtain permission to see the king for one hour, to make over the keys to him. She will then present herself to the Emperor in the palace.' The jailor, when he sees the bribe, becomes like water. Reflections on the effect on the moral character of taking bribes (670). Under the influence of the bribe the jailor omits to examine the litters. He goes to the Emperor, and says, 'O sun of the earth, the moon hath come, and all the planets and stars with her in 1,600 litters. Padmāvatī has come with the keys of the treasury of Citaur. She begs, with folded hands, that she may make them over to the king, for one hour. She begs that she may first see her husband, and then she will come into thy female apartments' (671). The Emperor gives the order to allow one hour's interview, and the royal litter goes in to the king with the others. The smith who is inside disguised as Padmāvatī gets out, cuts the king's fetters and makes obeisance. Fury rises in the king's heart as he is made free. He leaps on to a horse and roars like a lion. Gōrā and Bādal grasp their swords, and the other knights mounting their horses all stand ready. Each considers himself devoted to death and slays his thousands. News of the trick, and that they have cut their way out, is brought to the Emperor (672). They take the king off to Citaur. They are pursued by the Emperor with an immenso army. Gōrā says to Bādal, 'One eclipse is over, another is about to commence. See the immense army.' Bādal replies, 'Do thou accompany the flight of the king, and I will stay behind and meet the Emperor's troops. I would play a game of polo with the Emperor, and do it alone. I will earn my name of Bādal, when I carry off the ball from the field' (673). Gōrā insists on Bādal accompanying the king, while he stays behind. He is old, what regret will there be for his death. He keeps a thousand knights with him, and sends the others with Bādal, and the King. He awaits with his thousand men, the onset of the Emperor (674). The game of polo begins in right earnest. Poetical comparison of the game of polo to the sport of a woman's love (675). Gōrā roars a challenge in the battle (676). The battle. The charge of Gōrā and his companions (677). The thousand knights are slaughtered one by one. Not one turns his bridle, all their wounds are in front; as one falls another presses forward to die in his place. Finally they are all killed, and Gōrā alone remains alive (678). Gōrā sees that all his companions are dead, and knows that his fate is at hand. He flings himself furiously into the battle, one against thousands, but does not die. He fights desperately. The Emperor orders him to be taken alive without delay,

for Ratna Sēna is escaping (680). The Turks call upon him to surrender. He replies not. He looks upon his death as certain, and refuses to be taken alive. No one captures a lion alive. When he is dead they may drag him as they will. He is determined to cover Ratna's retreat (681). Sur'jā,¹ the wrestler, attacks him, with Mir Hamza, 'Alī, Ayūb and Tāyā, the general who had conquered Landhaur. Gōrā is struck in the belly with a javelin, and as it is withdrawn his bowels fall out. A bard exclaims, 'Well done, Prince. Carry thy entrails on thy shoulder that thy horse may not tread on them'² (682). Gōrā cries, 'It is the end, I must fall to the earth. It is the end, and my head must roll in the dust.'—He rushes upon Sur'jā, who again wounds him with a javelin, while Gōrā strikes him with his sword. He strikes a second blow which Sur'jā receives on his shield, and a third which falls on his helmet (683). Sur'jā finally strikes a terrible blow and smashes Gōrā's head.³ The portents which occur at Gōrā's death. Thus Gōrā dies, and the gods bring him water, while Bādal escorts the king safely to Citaur (684).

Padmāvatī's joy at hearing of her husband's release (685). The rejoicings when they meet. She worships his feet, and he kisses her head (686). Padmāvatī expresses her desire to sacrifice herself for him (687). Then she addresses Bādal and praises him (688). The King tells her the horrors of his imprisonment. His only consolation was the hope of meeting her again (689). Padmāvatī tells the story of her sorrow (690).

CANTO XLIV.

THE TALE OF DĒVA PĀLA.

Padmāvatī continues,—'In addition to this I tell a thing that wringeth my soul. A cruel mountain of sorrow fell on me. Dēva Pāla sent a bawd, in disguise of a Brāhmaṇī, who came to me deceitfully. Her words were like poison to me. I restrained my five senses, and I repeatedly mortified myself' (691). When he hears the conduct of Dēva Pāla, a hard thorn falls into the heart of the King. He determines to seize Dēva Pāla before the Turk arrives at Citaur. He remains awake the whole night. Next morning he sets out to besiege Kam-bhal'nēr, a difficult fort to take. He has a terrible fight (692).

¹ See 527.

² This refers to an old Rāj'pūt legend. The poet is hardly responsible for it.

³ In the original the sound excellently re-echoes the sense.

CANTO XLV.

THE FIGHT WITH DĒVA PĀLA.

Dēva Pāla roars forth in the battle to Ratna, 'Let me and thee fight in single combat.' He strikes Ratna in the belly with a poisoned javelin, which pierces through his body and comes out at the back. Ratna himself strikes Dēva Pāla and cuts off his head. He then falls senseless, and loses his power of speech. He is brought home on a bed (693).

CANTO XLVI.

THE END OF THE KING.

The King dies, after making over charge of the fort to Bādai (694). Padmāvatī dons her silken *sārī* and goes forth with her beloved to the pyre. She adorns herself to become Satī (695).

CANTO XLVII.

THE SATI.

Both Nāgamatī and Padmāvatī become Satīs (696). They prepare the pyre, distribute alms, circumambulate seven times, and are burnt without contortion of a single limb (697).

While they are burning with their beloved the Emperor comes and besieges the fort. He hears the fate of Ratna and Padmāvatī and throwing a handful of ashes in the air, declares that all the world is illusion. His whole army does the same, and cries, 'Until this dust falls on our tombs, the desire of the world will not be satisfied.' Then they take the fort by assault, and Bādai dies fighting in the gate.

Before the Emperor's army takes it, the women of Citaur immolate themselves, and the men all die in battle. He destroys the city, and CITAU BECAME ISLĀM (698).

'I asked the meaning of all this from learned men, and they told me that they understood it not. The fourteen continents are all in man's body. Citaur is the body, and the King is the soul. Siṃhala-dvīpa is the heart, and Padmāvatī is wisdom. The parrot is the *Guru*, who showeth the right way, without whom the world is void of quality, and Nāgamatī is the cares of this world, and he is saved who is not caught by her. Rāghava, the pandar, is Satan, and 'Alān'd-din, the Emperor, is illusion. So meditate on this love-story, and let him who can understand Turkish, Arabic, Hindui, whatever languages there are, in whatever tongue the way of love is told, all praise it (699).

‘I Muḥammad have collected and written this book. He who heareth it may gain the pangs of love. I collected and joined it with my heart’s blood, and, with the love of love, mine eyes flowed tears. Knowing this did I compose my lay, that so a mark might remain of me in this world. *Where is now that Ratna Sēna, and where that wisdom-bearing parrot? Where is that ‘Alāu’-d-dīn the Emperor, and where that Rāghava who told him tales? Where is that lovely swan Padmāvatī? Naught of them hath remained, but their story. Happy is she whose fame is like unto hers. The flower may die, but its odour remaineth ever.*¹ Who hath not sold his fame in the world, and who hath not bought it? If a man read this lay and also remember me, he hath bought two-fold weight, (*i. e.*, he benefiteth himself and me) (700).

‘Muḥammad, thou art old. Thy youth is gone. Thy strength is departed and thy body is lean. Thy sight is gone and thine eyes give naught but tears. Thy teeth are gone and thy cheeks are sunken. Thy tongue is stiff and thy words are halting. Thy wisdom is gone and people call thee mad. Thy pride is gone and thy head is bent. Thine ears are gone and thou only hearest those who speak loud. The blackness of thy locks is gone, and thy head shaketh. The black bee of thy locks is gone and hath left them grey. Thy youth hath won the game and carried it off for its prize. As long as there is life, youth remaineth, but when death comes, it becometh another’s.

‘When an old man noddeth his head, it shaketh in anger on that account (that his youth is gone). Who was it that blessed me and wished that I might live to (forsooth) a good old age?’ (701).

APPENDIX I.

LIST OF FLOWERS AND TREES.

In several passages Malik Muḥammad gives long lists of names of flowering plants and of trees. Their identification has been difficult, the ordinary dictionaries having been found to be untrustworthy guides. The following is a list of most of the names which occur. The spelling of the vernacular words is only provisional, pending the fixing of a correct text.

I know nothing of botany myself, and must express my acknowledgments to Dr. Prain, of the Botanical Gardens, Sibpur, for the identifications given. The list will be found useful by future lexico-

graphers. Many of the plants named are little known, and a convenient list giving the scientific nomenclature authoritatively has long been wanted.

Ājirī, the common Fig, *Ficus carica*, *L.*

Amṛita bēlī, (?) the Black Currant, *Ribes nigrum*, *L.*

Āuna, ? *Āolā*, the Emblic Myrabolan, *Phyllanthus emblica*, *L.*

Āba, or *āma*, the Mango, *Mangifera Indica*, *L.*

Āma, see *Āba*.

Imilī, the Tamarind, *Tamarindus Indica*, *L.*

Kaṭahari, the Jack-fruit, *Artocarpus integrifolia*, *L.*

Kadamba, the Kuddum, *Anthocephalus cadamba*, *Miq.*

Kamarakha, the Averrhoa, *Averrhoa carambola*, *L.*

Karaūdā see *Rāi-karaūdā*.

Karanā, the Citron, *Citrus medica*, *L.*, var. *acida*, *Brandis*, *C. acida*, *Roxb.*

Kisimisa, the Grape Vine, *Vitis vinifera*, *L.* The same as *dākha*. A Persian form.

Kunda, the Indian Jasmine, *Jasminum pubescens*, *Willd.*

Kūjā, a kind of Rose, *Rosa Brunoniana*, *Lindl.*

Keorā, see *kētakī*.

Kētakī, or *keorā*, The Fragrant Screw-pine. *Pandanus odoratissimus*, *L.*

Kērā, the Plantain, *Musa paradisiaca*, *L.*

Kēsara, the Safflower, *Crocus sativus*, *L.*

Khajūra, the Date-palm, *Phoenix sylvestris*, *L.*

Khirani, the *Mimusops hexandra*, *Roxb.*

Khuruhuri, the *Khurhur*, *Ficus cunia*, *Ham.*

Galagala, the Elephant Lemon, or Kumaon Lemon, *Citrus Limonum*, *L.*

Gulāla, the common Basil, see below. *Ocimum Basilicum*, *L.*

Guā, the Areca-nut palm, *Areca catechu*, *L.* Roxburgh says this is the Bengali name of *supārī*.

Camēli, the Arabian Jasmine, *Jasminum sambac*, *Ait.*

Campā, the Champak, *Michelia champaca*, *L.*

Oiraūjī, *Buchanania latifolia*, *Roxb.* Its kernels are used instead of the *dēsi bādāma*.

Chohārā, the Date-palm, *Phoenix dactylifera*, *L.*

Jābhīrī, the Orange Citron, *Citrus medica*, *L. var.*

Jāiphara, the Nutmeg, *Myristica officinalis*, *L. fil.*

Jāmuna, the Black Wild Plum, *Eugenia jambolana*, *L.*

Jālī, the Spanish Jasmine. *Jasminum grandiflorum*, *L.*

Jūhī, a variety of Indian Jasmine, *Jasminum auriculatum*, *Vahl.*

Tāra, the Palmyra Palm, *Borassus flabelliformis*, *L.*

Turuñja, the Citron proper, *Citrus medica*, *L.*

Tātī, the Mulberry, *Morus Indica*, *L.*

Dakha, the Grape Vine, the Hindi name of *Kisimisa*, *Vitis vinifera*, *L.*

Dārīū, or *dārīma*, the Pomegranate, *Punica granatum*, *L.*

Nariara, the Cocoa-nut, *Cocos nucifera*, *L.*

Nāgēsara, the Rose Chesnut, *Mesua ferrea*, *L.*

Nārāgu, the Orange, *Citrus aurantium*, *L.*

Nimbu, see *Nīu*.

Nīu, or *nimbu*, the Sour Lime, *Citrus acida*, *Roxb.*

Newañjī or *nyañjī*, the Red Currant, *Ribes rubrum*, *L.* The name is only known in Lāhūl now-a-days.

Nyañjī, see *Newañjī*.

Bakaurī, the Abelia, *Abelia triflora*, *Br.* Most of the species are Japanese and Chinese. This one is found in the N.-W. Himālaya.

Daḥaharī, the Baḥhal, *Artocarpus lakoocha*, *Roxb.*

Badāma, the almond, not the *Terminalia catappa*, but the *Prunus Amygdalus*, *Baill.*

Dēri or *bairu*, the Jujube, *Zizyphus jujuba*, *L.*

Bolasari, see *mōlasari*.

Mahuā, the Mahoowa tree, *Bassia latifolia*, *Roxb.*

Mālulī, the Clove-scented Aganosma, *Aganosma caryophyllata*, *Don.*

Mōlasari or *Bolasari*, the *Mimusops elengi*, *Linn.*

Rāi-karāūdā, the Corinda, *Carissa carandas*, *L.*

Basa bēli, the Wax-plant, or Honey-plant, *Hoya lanceolata*, *Wall.*

Saykhudrān, Sorrel, *Rumex vesicarius*, *L.*

Satibaraga or *Sadabaraga*, the Marigold, *Calendula officinalis*, *L.*

Siṅṅārahāra, the Weeping *Nyctanthes*. *Nyctanthes arbor-tristis*, *L.*

Sudarasana, the Rose-apple, *Eugenia jambos*, *L.*

Supārī, see *Guā*, the Areca-nut palm, *Areca catechu*, *L.*

Seotī, the Dog-rose, *Rosa glandulifera*, *Roxb.*

Sēu, the apple, *Pyrus malus*, *L.*

Sōñjarada, the Oleaster or Wild Olive, *Elacagnus conferta*, *Roxb.*

Hariphāryaurī, the Indian Gooseberry, *Rhodomyrtus tomentosa*, *Wight.*

Dr. Prain continues :—

'By the bye, the majority of the names have a Pañjābī ring about them, and most of the plants that are not natives of the N.-W. Provinces are ones that come from the West (Pañjāb to Persia), or that come from the Kumoān Hills, rather low down.

'Thus, taking the flowers—

'The *kadamba*, *karanā*, *kunda*, *campā*, *jūhī*, *mālātī*, *siṅṅārahāra*, and *sudarasana* might be natives of the writer's country. (But the *kadamba* may have been introduced from the Lower Provinces.)

'The *kēsara*, *camēlī*, *jāhī*, *satibaraga*, are Western plants introduced before his time to Oude. (The *jāhī* may also be from Kumāon).

'The *kadamba*, *kētakī*, *nāgēsara*, *mōlasari* (perhaps), must have been introduced from the eastward by way of the Lower Provinces.

'The *jāhī* (see however note above), *kūjā*, *bakauri*, *rasa-bēli*, *sootī*, and *sūnjarada* are natives of N.-W. Himālaya, and, except the *jāhī*, which also comes from Afghānistān and Persia and can stand a deal of heat, can hardly have been known to him, unless he was in the habit of going some way into the hills, for I do not feel sure that they could have been grown in the plains. At any rate, if he could grow them below, they came originally from the hills of Kumāon or Kāshmir.'

In another communication regarding the trees, Dr Prain writes: 'The names of the oranges and lemons are interesting and fall in exactly with those known to Bonavia, in the very country in which the poet wrote.

'You will note again the very marked Pāñjābī and Himalayan ring about the names, e.g., in the red currant, with a regular Hill name. In this case, I think that the *amṛita bēli*¹ must be the black currant. I cannot think why the author gives (in the same passage) the two names, *supāri* and *guā*, of the betel-nut. They mean exactly the same now-a-days. The name for sorrel² I do not find in any of our books, I give, however, the Latin name of sorrel. The Indian gooseberry³ has not any name quoted so far as my reading goes. I give its Latin name also. It is an exception to the rest of his fruits, for it comes from South India and Ceylon, (the only thing that is restricted to these parts in his whole list.)

'*Gulāla* is the common basil of old-fashioned English gardens. The name is usually given, not to the green-leaved plant we know, but, to a purple-leaved form that one gets in India. By the way, the plant is generally spoken of as *gulāl tulsī*, so that the word is used as an adjective. Our basil is, of course, the Indian *tulsī*, but, owing to our and their interest centering on different ones, they give their name, *unqualified*, to a different one from the one that is *unqualified* by us. Thus:—

English name.	Scientific name.	Indian name.
THE BASIL.	<i>Ocimum basilicum</i> .	Gulāl tulsī.
Sacred Basil.	<i>Ocimum sanctum</i> .	TULSĪ.
Sweet Basil.	<i>Ocimum gratissimum</i> .	Rām tulsī.

¹ *Bēli* is the Pāñjābī name for the black currant.

² *Sankhadarāu*, which I had identified with the Sanskrit *Syakhadrava*, which the dictionaries translate by 'sorrel.' G. A. G.

³ *Hariphāryauri*, translated in all dictionaries by 'Indian Goosecherry.' G. A. G.

APPENDIX II.

LIST OF BIRDS.

The poet also gives (stanza 29) a long list of birds. Unfortunately I know even less about them than I do about botany. I accordingly applied to an acknowledged authority, Dr. Scully. The following is condensed from the information which he very kindly gave me, together with what I have been able to make out from inquiries from natives.

Kāga, the Indian Crow, *Corvus splendens*, Vieillot.

Kōila, the Indian Cuckoo, *Eudynamis honorata*, L. According to the poet, its cry is 'kuhū, kuhū.'

Gudurū. An Urdū glossary translates this by *pōdanā*, the Smaller Skulking Warbler, which Forbes says is *Sylvia olivacea*. Its cry is 'tuhū, tuhū.'

Paṇihā. Dictionaries call this the Sparrow-hawk, which is wrong. It is the Hawk-cuckoo, *Hieroccyx varius*, Vahl. It is a true cuckoo and not related to the sparrow-hawk. The poet says its cry is 'piu, piu' (beloved, beloved). The ordinary native tradition is, that it says 'pī kuhū' (where is my love?) It is the 'Brain-fever Bird' of Anglo-Indians.

Parēwā, the Blue Rock Pigeon, *Columba intermedia*, Strickland.

Pāṇḍuki, a sort of family name for many species of doves. We may perhaps consider that the particular species intended is the Indian turtle dove, *Turtur meena*, Sykes. Its cry is 'a single tūhī.'

Bhīgarāja, or *Bhīmarāja*. The dictionaries wrongly call it a Shrike. It is the Racket-tailed Drongo, *Dissemurus paradiseus*, L. Sanskrit *Bhrīṅga-rāja*. It is a sort of King-crow. As the poet says, 'It speaks many languages.' It is an excellent talker.

Maharī, not identified. Its cry is *dahī, dahī*.

Mūra, the peacock, *Pavo cristatus*, L.

Sārḍ, not identified. Forbes gives *sārū*, a kind of bird, a species of black-bird. In the poem it is coupled with the *suā* or parroquet. The cry of both is said to be *raha-caha*, which seems to mean twittering.

Suā, see *sārḍ*. It is a Parrot or Parroquet. Dr. Scully says, 'In the absence of evidence tending to fix the particular species, we may take the commonest species, viz., the rose-ringed parroquet, *Palæornis torquatus*, Bodd.'

Harēwā, a v. l. for *parēwā*, above, the Gold-fronted Green Bulbul, *Phyllomis aurifrons*. Temm. It is a well-known cage-bird and a beautiful songster.

**Hārila*, the green pigeon, *Crocopus phasianopterus*, Latham.

Study of Sanskrit in Ceylon—By PANDIT HARI MOHAN VIDYĀBHŪṢAṆ.

The island of Ceylon has been known to us from very early times : first, as a fabulous country inhabited by a class of men called Rākshasas, who, though civilised in arts and sciences, were yet rude in their habits of life ; secondly, as a country of precious stones during the Buddhistic period ; and lastly as a country occupied by a large colony from the city of Sīṃhapura in Western Bengal, then called Rāḍha. But after the Arabs, the Portuguese and the Dutch came to trade in the East, and became the lords of the Indian Seas, the Bengalese who used to go to Ceylon, embarking at the ancient port of Tāmraliptī, the modern Tāmluk, ceased to make sea-voyages.

It is owing to this fact, that, at present, communication between Ceylon and Bengal has become a thing of the past. With the exception of a few natives of India who happen to visit Colombo on their way to Europe, the people of this country know very little of Ceylon.

At a time when the spirit of adventure awakened the dormant energy of the Indian people to action, and when the barriers raised by Hinduism against sea-voyages were removed by the enlightened spirit of Buddhism, thousands of barks used to sail from Tāmraliptī to the shores of Ceylon, (i. e., Tāmrāparṇī or Tāmraveni of the ancients). It was through the efforts of those merchants that the fame of the mineral wealth of Ceylon became known to the Romans and the Greeks, who had intercourse with the empire of Magadha. More than two centuries before Alexander's conquests in the East, Indian merchants from Srāvastī, the ancient capital of Oudh, used to visit Ceylon, evidence of which is now coming to light from the sacred books of the Buddhists, preserved in the Archives of the Dalai Lama at Lhasa.

Besides what can be gathered from Tibetan sources, something can be gleaned from the Kalpalatā, the Ratnāmālā, and other Sanskrit works lately recovered from Tibet by Bābū Sarat Chandra Dās.

The story of Mukṭalātā, which has been published in the Bibliotheca Indica Series contains the following :—

ततः कदाचिद्दिनः नावस्त्रीपुरवासिनः ।

मकरन्दरुणीयं सिंचनद्वीपमाययुः ॥

* * * * *

काश्चन विष्णुनीयं सम्प्राप्तास्ते विनां पुरिम् ।

प्रव्यानेषु मद्रुतं मद्रुतेषु मद्रावने ॥

i. e., "Some time afterwards native merchants from Srāvastī crossed

over the sea and reached the island of Ceylon. Having resided there for some time they crossed the sea again and reached their native town; and after bowing before their Lord they gave him an account of her (*i. e.*, the princess') behaviour and handed over her letter to Him."

Mr. James D'Alwis, in his preface to the descriptive catalogue of Sanskrit, Pāli, and Singhalese literary works, observes:—"If the Orient pearls for which Ceylon has been famed from all antiquity, are still highly prized amongst the nations of the world, the intellectual pearls which Oriental scholars of many nations will be enabled to gather from Laṅkā's store-house of Literature, will not be esteemed as less precious or valuable." This remarkable passage struck me very much when I glanced over the pages of his catalogue. Being a Brāhman, I did not attach much value to the numerous Pāli and Singhalese Buddhist works which have been enumerated in it, nor did I wonder at the mineral wealth and pearls which Ceylon possessed in olden times. What struck me most was the account of the study of Sanskrit which prevailed in Ceylon during the early centuries of the Christian era.

So early as the fifth century the study of Sanskrit was considered essential for all those who passed for literati in Ceylon, and Sanskrit scholars were respected side by side with the professors of Pāli, the sacred language of the Buddhists. We are told in the Mahāvamśa that Brahmanism flourished in Ceylon for about ten centuries, till 1000 A. D. This statement is borne out by facts and also by the Sanskrit works which were written by Singhalese authors. It is also very interesting to note that while the nine gems, called *nava ratna*, adorned the court of Vikramāditya during the 6th century A. D., the Augustan age of India, there should have been a king on the throne of Ceylon, who in scholarship in Sanskrit and in versification was not less gifted than the son of Sarasvatī—the immortal Kālidāsa.

The fame of Kumāradāsa as a poet had spread far and wide, and Kālidāsa who had read one of his productions—the "*Jānaki-harṇa*"—was so much struck with the true poetic genius of the Royal Poet of Laṅkā that he was induced to make a journey to Ceylon to meet him.

Oriental scholars have not yet been able to gather sufficient chronological information about the age of Kālidāsa to enable us to enter into a discussion on the subject. There are so many conflicting statements as to his date, that one is apt to be bewildered by them. There is a tradition in Bengal that he died in the house of a courtesan. This statement, whether true or false, is borne out by a tradition which can be gathered from Singhalese works. The learned Bhikṣu Dharmārāma, in the preface to his edition of the "*Jānaki-harṇa*," gives prominence to this account. It is said that Kālidāsa struck with the wonder-

ful poetic genius of Kumāradāsa, undertook a long and tedious journey from Central India to meet the royal bard in his native land.

"Kumāradāsa who was a profound Sanskrit scholar and poet reigned nine years, and ended his life by throwing himself into the funeral pile of his friend Kālidāsa." The following lines from the Singhalese work called "Perakumbāsirita" fully corroborate the above statement and further record the very high merits of the king as a poet:—

*Ejara Kiviyaṛa piṇi Jānaki-haraṇa mahakurbendi,
Kumāradasa rada Kālidasa nam Kiriṇdu Haṭa Siya diṇipidi.*

i. e., "The king Kumāradāsa who with immortal poetic felicity composed the Jānaki-haraṇa and other great epics, sacrificed his life for the great Kālidāsa."

An episode so interesting for the light it throws on the lives of Kumāradāsa and Kālidāsa demands our attention. The Singhalese story in brief is this:—

The king was in the habit of frequenting the house of a woman to whom he was attached. On one of these visits he wrote on the wall the two lines—

*Padmāt padmaṇi samudbhūtam
S'rūyate na cha drīsyate.*

i. e., "It is heard, but not seen, that a lotus flower is produced from another lotus flower."

Under them he wrote a line offering a reward to the person who should complete the verse. Kālidāsa, then on a visit to the great royal bard whose poem he had seen in India, took lodgings that evening, as chance would have it, in the same house, and happening to see the lines on the wall, completed the verse by adding,—

*Bālā tava mukhāmbhujāt
Tvannetrendīvaradvayam.*

i. e., "O Maiden! from the lotus of thy face have sprung up the two blue lilies of thine eyes."

The woman to whom perhaps the poet meant the lines as a compliment, influenced by the hope of obtaining the promised reward, murdered Kālidāsa that night and hid his body.

When the king visited her the following morning, she demanded the reward as the writer of the couplet. But Kumāradāsa, detecting in them the genius of a true poet, would not believe her, but insisted on her disclosing the real author. On being threatened, the murderess confessed her crime. When the corpse of Kālidāsa was brought out, the king's

sorrow and consternation knew no bounds. He ordered a grand funeral in honour of the renowned poet. When the pile was lighted, the generous-hearted monarch, overwhelmed with sorrow, sprang into the fire and was soon consumed by the flames together with his brother bard. Five queens of the king instantly followed his example. According to the Singhalese custom, seven monuments were erected, and seven bô-trees planted on the spot of the cremation. This sad event appears to have happened at Mátara (or Mahátīrtha), where the king is said to have resided at the time.

Within the town there is a place by the name of "Hat Bodiwata" (सप्तबोधिबट—the garden of seven bô-trees), which tradition points out as the scene of this tragedy.

In India a similar tradition prevails regarding Kálidása, who is said to have written the following verse :—

कुसुमे कुसुमोत्पत्तिः श्रूयते न च दृश्यते ।

बाजे तव मुखाश्लोके कथमिन्द्रीवरद्वयम् ॥

i. e., "It is a mere hearsay statement, that flower begets flower, but no one has realized (the truth of it) by actually seeing it. O Maiden, how is it that I see two lilies on your lotus-face?"

It is curious that the traditions that prevailed in both countries should be substantially the same, though expressed in different words. Of the two, the Indian *śloka* is decidedly the better.

Some Oriental scholars have conjectured the date of Kálidása to be in the 6th century. That Kumáradása was a king of Ceylon in the 6th century is a historical fact, as can be gathered from the Mahāvamsa, therefore it is not improbable that the great Indian poet Kálidása was a contemporary of Kumáradása. *

It is to be regretted that the original works of Kumáradása should have been lost. But quotations from his Jánakī-haraṇa are to be found in Patañjali's Mahābhāṣya, in Rājasekhara's work, in Ujjala-datta's Uṇādi Vṛitti, and also in Kshemendra's Auchityālaṅkāra. Prof. Peterson, in his paper "On the Auchityālaṅkāra of Kshemendra, with a note on the date of Patañjali," made the following remarks :—

“कुमारदासः—

अयि विजयीहि हृदोपगूहमं त्यज नवसङ्गमोदवत्सलम् ।

अवसकरोद्गम एव वर्तते वरतनु संप्रवदन्ति कुकुडाः ॥

(Kshemendra's Auchityālaṅkāra.)

i. e., "By Kumáradása—

O, give up the firm (warm) embrace and leave the lover who is

timid at this first union. O beauteous Maiden! the rays of the rising sun are appearing and the cocks are crowing."

"The discovery that Kshemendra quotes this verse and assigns it to Kumāradāsa will one day, I hope, prove a valuable datum for the Mahābhāṣya itself. Unfortunately we do not yet know Kumāradāsa's own date. But the following verses by him are quoted here, as, with the present example, presenting strong internal evidence that a writer who quotes Kumāradāsa cannot have lived at the date now widely accepted for Patañjali."

Prof. Peterson again published the following note in the *Academy* for the year 1885, page 277:—"I have lately come across a date for Kumāradāsa and the name of his book. In Jalhana's 'Sūkti Muktvāli' the following verse of Rājāśekhara's treats of this poet:—

जानकीहरणं कर्तुं रघुवंशे स्थिते सति ।

कविः कुमारदासश्च रावणश्च यदि क्षमः ॥

"i. e., 'The poet Kumāradāsa and Rāvana, if any, are the only persons who can achieve the *Jānaki-harana* (or Rape of Sītā) in the face of the Raghuvamśa (or unawed by the dynasty of Raghu).'

"It is clear from this that Kumāradāsa wrote his '*Jānaki-haranam*' after Kālidāsa."

I think, by writing 'after Kālidāsa,' Prof. Peterson meant after the "Raghu-Vamśa," for it is only stated in the above śloka that Kumāradāsa's "*Jānaki-harana*" was a later production than the "Raghu-Vamśa." But it does not necessarily follow that Kumāradāsa flourished after Kālidāsa.

The 'Pada-Chaṇḍrikā,' by Rāya-Mukṭa, a commentary on the Amarakośha, which is a work of the 15th century, has numerous quotations from Kumāradāsa's "*Jānaki-harana*." This shows that the work was largely used in India during the 15th century.

We are told by the Singhalese historians that about the 14th century certain Dravidian kings conquered Ceylon and exterminated all the Sanskrit and Pāli works of that island; so much so that the Singhalese, after the downfall of this dynasty, had to bring all the sacred books from Burmah. It seems that Kumāradāsa's works were also destroyed at that time in Ceylon. But as the *Jānaki-harana* was extant in India up to the 15th century, we may hope that it will, some day, be discovered by the Paṇḍits who are now engaged in collecting Sanskrit Manuscripts under the auspices of the Government.

In 1870 Mr. James D'Alwis, who was entrusted with the work of searching for Sanskrit and Pāli manuscripts in Ceylon, discovered a manuscript of the Singhalese *Sanna*, i. e., a literal translation of the

work, the “Jánakī-haraṇa.” Being himself a great scholar, he was able to appreciate its excellence. He caused a Paṇḍit to restore ten verses of the work from the said *sanna*, or Singhalese commentary.

I here quote his remarks on the poem: “The Jánakī-haraṇa is a very ancient and very interesting Sanskrit poem. A Singhalese *Sanna*, or literal translation of it, alone has been discovered. It is, however, possible that the original work may still be found in some nook of an old monastic library. Like all Singhalese *Sannas*, this translation quotes the words of the original in their integrity, and it is therefore not impossible to restore the words to their original poetical form; though, we confess, the manuscript in our possession requires much correction after comparison with other copies, which, we hope, may yet be found. But its restoration into metro is undoubtedly a very arduous work. Considering, however, that this poem, according to the opinion of the learned in Ceylon, is ‘not inferior to the works of Kálidása,’ the Indian Shakespeare, and that it may be ranked amongst the Mahákávyas, or great poems, it may be well worth the trouble of some Oriental scholar in Europe to undertake the work of restoration.”

I am glad to notice here that recently Bhikṣu Dharmárāma, the learned Principal of the Vidyálankāra Oriental College, Ceylon, has done great service to Oriental scholarship by restoring Kumārādása's Jánakī-haraṇa into metro from the Singhalese literal paraphrase. He has collected several manuscripts of the *sanna*, and has built an edifice with the material contained in them—which, I may hope, will be found to resemble its prototype—the lost Jánakī-haraṇa, if found out in future. Had Mr. D'Alwis been living now, how glad he would have been to see the realization of his hopes about the work in the labours of Bhikṣu Dharmárāma—twenty years later.

To enable us to form an estimate of the comparative value of the restored verses, I subjoin a transcription in Devanāgarī of the first 10 verses of the Canto IX from the present edition, side by side with those restored by Mr. D'Alwis. (See Appendix I.)

From a careful examination of the above it will be seen that the spirit of the verses given by Dharmárāma and D'Alwis is the same, though a slight alteration in the arrangement of the lines may be noticed here and there.

The occasional deviation of Dharmárāma's ślokas from those given by Mr. D'Alwis is due to the use of synonymous words. This is chiefly due to the fact that Dharmárāma had access to more correct and trustworthy manuscripts than Mr. D'Alwis had access to twenty years ago. It is also to be noted that he took greater pains than Mr. D'Alwis, as he had gleaned materials from different sources with a view to publish

the complete work of the "Jānaki-harṇa." Mr. D'Alwis had frankly confessed his inability to procure further materials, and so he was content with restoring to us only ten verses of the entire work.

It is a pity that Bhikṣu Dharmārāma should have thought it fit to publish his edition of the Jānaki-harṇa in the Singhalese character, which is not intelligible to many of us. I believe, if the production were transliterated into Roman or Devanāgarī character, it would be sure to receive the recognition it deserves at the hands of many Oriental scholars.

I beg to submit the first forty-two verses of Canto I, which I have transliterated into the Devanāgarī character. I rejoice to say that, in my humble opinion, true signs of poetic genius can be seen from the verses I have already transliterated.* (See Appendix II.)

APPENDIX I.

VERSES RESTORED BY BHIKSHU DHARMARĀMA.

CANTO IX.

इति प्रवृत्तस्य सुतस्य केषुचित् गतेषु मासेषु सुखेन भूपतिः ।
 पुरं प्रतस्थे वनितापरिग्रहेः त्रयं सुतानामितरत् समर्थं सः ॥ १
 कञ्चन-भारेण च श्लोक-सम्पदा पदद्वयं मन्त्ररविक्लमा पितुः ।
 ततान् पत्न्याद्भिरपेक्ष्य विन्दुभिर्दृष्टोः प्रयाजाभिमुखी भुवः सुता ॥ २
 गुह्यस्ततोऽसौ गुह्यपक्षवर्त्तिनीं मतिं समाजम्भ्य गुह्यैः पुरस्कृताम् ।
 क्षपत्यक्षां साधु जगौ गरीयसीं गिरं सतीनामुचितव्रताभयाम् ॥ ३
 परं प्रकर्षो वपुषः समुन्नतिर्गुह्यस्य तातो नृपतिर्नवं वयः ।
 इति स्म मा मानिनि मानमागमः पतिप्रसादोन्नतयो हि योधितः ॥ ४
 स्त्रियो न पुंसामुदयस्य साधनं त एव तज्ज्ञानविभूति-हेतवः ।
 तद्विद्वियुक्तोऽपि घनः प्रणम्यते, विना न मेघं विजयन्ति विद्युतः ॥ ५
 गतापि भर्त्रे परिकोपमायतं गिरोऽल्लया मा पश्यार्थदीपनीः ।
 वदन्ति मौनं हि परं प्रसादनं कुलस्त्रियो भर्तृजनस्य मर्त्यने ॥ ६
 पतिव्रता वदन्मवदन्मङ्गला करोति श्रीलेन गुह्यस्पृहं पतिम् ।
 विनष्ट-चारित्र-गुह्या गुह्यैर्विद्यः पराभवं मर्तुंरपैति दुस्तरम् ॥ ७

* [On Dharmārāma's edition of the "Jānaki-harṇa," see Professor E. Leumann's review in the *Vienna Oriental Journal*, vol. VII, p. 220. Ed.]

अनं त्वयि व्यावृत्तिविस्तरेण मे कुर्वन् तत् यच्चरितं त्वदाम्रयम् ।
 अतिं प्रयातं जरसैव जर्जरं सहस्रघेदं हृदयं न दारयेत् ॥ ८
 अयं त्वदेकप्रवणो मनोरथो वृथाद्य दैवादपि नाम नो भवेत् ।
 इति प्रवक्तुर्जरतो निरासिरे निगृह्य कण्ठं वचनानि मन्युना ॥ ९
 उदग्रभासः शिखया शिखामण्योः खजा च धम्मिल्लकिरीटदृष्टया ।
 प्रमृज्य पादौ जगत्स्य जम्पती क्षयादयातामथ क्षम्भिताशिषौ ॥ १०

CANTO IX.

VERSES RESTORED BY MR. D'ALWIS.

इति प्रवृत्तस्य सुतस्य केषुचित् गतेषु मासेषु सुखेन भूपतिः ।
 अयं सुतानामितरत् समर्प्य सः पुरं प्रतस्थे वनिता-परिग्रहे ॥ १
 नितम्बभारेण च श्लोकसम्पदा भुवः सुता मन्यरविक्रमा पितुः ।
 ततान् पादावुदविन्दुभिर्दृष्टोत्प्रेत्य पत्न्याभिमुखी प्रवृत्तये ॥ २
 गुह्यस्ततोऽसौ गुह्यपक्षवर्त्तिनीं मतिं समाश्रम्य गुह्यैः पुरस्कृताम् ।
 अपत्यकां साधु गिरं गरीयसीं जगौ सतीनामुचितव्रताश्रयाम् ॥ ३
 परं प्रकर्षो वपुषः समुन्नतिः गुह्यस्य तातो नृपतिर्वयो नवम् ।
 इति स्म मा मानिनि मानमागाः पतिप्रसादोन्नतयो हि योषितः ॥ ४
 स्त्रियो न पुंसामुदयस्य साधनं त एव तद्धामविभूति-हेतवः ।
 तडिहियुक्तोऽपि घनः प्रवृत्तते विना न मेघं विनसन्ति विद्युतः ॥ ५
 गिरोऽज्ञाया मा परवधार्थदीपनीः गतापि भर्त्रे परिकोपमाश्रयम् ।
 कुलस्त्रियो भर्तृजगत्स्य भर्त्रेण वदन्ति मौनं हि परं प्रसाधनम् ॥ ६
 पतिव्रता वक्ष्यमवप्रयमङ्गना करोति शीलेन गुह्यस्युहं पतिम् ।
 विनष्ट-चारित्र-गुह्या गुह्यैषिण्यः पराभवं भर्तुष्येति दुस्तरम् ॥ ७
 अनं त्वयि व्यावृत्ति-विस्तरेण मे अतिं प्रयातं चरितं त्वदाम्रयम् ।
 न दीरयेद् यज् जरसैव जर्जरं सहस्रघेदं हृदयं कुर्वन् तत् ॥ ८
 अयं त्वदेकप्रवणो मनोरथो वृथाद्य दैवादपि नाम नो भवेत् ।
 इति प्रवक्तुर्वचनानि मन्युना निगृह्य कण्ठे जरतो निरासिरे ॥ ९
 उदग्रभासः शिखया शिखामण्योः खजा च धम्मिल्लकिरीटदृष्टया ।
 प्रमृज्य पादौ जगत्स्य जम्पती क्षयादयातामथ क्षम्भिताशिषौ ॥ १०

CANTO IX.

Translation.

1. Thus when his (eldest) son had happily spent a few months, the king got his three remaining sons married and started for his capital.

2. (The Princess) born of the earth, when about to start in the company of her husband, touched in reverence with tearful eyes the feet of her father. Her steps were graceful and slow owing to the heaviness of her heart (at the prospect of separation) and also to that of her limbs.

3. Then her father addressed his accomplished daughter in language which was (at once) instructive and also befitting the vows of purity in the fair sex ; so that she might always abide in virtue.

4. "O my daughter, being possessed of extraordinary self-respect, do not be proud of your personal charms, your high accomplishments, your royal parentage, or of your budding youth ; for the welfare of the female sex consists in the love of their husbands.

5. "The wordly success of men is not due to woman. But men are the source of the good fortune and prosperity of their wives. For there cannot be lightning without clouds, though the clouds appear charming when there is no lightning.

6. "Even when you become angry, do not use a strong word to your husband. It is said that silence is the best resource of a noble wife when she is reproved by her husband.

7. "A wife devoted to her husband by her chastity, charms a good husband. A wife who has abandoned a virtuous life, incurs the irredeemable displeasure of a virtue-loving husband.

8. "Your behaviour should be good, so that when it reaches my ear, my heart which is sore and infirm with age, may not be pained in a thousand parts.

9. "Let not this cherished hope of mine, which is centred in you, even by chance end in nothing." When the old man expressed himself in this manner, sorrow choked his throat and he could not speak any more.

10. The couple at last set out from their father's home, having bowed their head to the feet of king Janaka. The wreaths of flowers which adorned the crown of the bridegroom which was topped with glittering gems, and also the dressed locks of the bride now covered the feet of king Janaka.

APPENDIX II.

जानकी-हरणम् ।

CANTO I.

आसीदवन्ध्यामतिभोगभारादिवोऽवतीर्णा नगरीव दिव्या ।
 क्षत्राणख्यानशमी समृद्धा पुरामयोध्येति पुरी परार्द्धा ॥ १
 यत्-सौध-प्रदङ्गाय-सरोज-राग-रत्नप्रभाविष्कुरितः प्रशाशः ।
 पौराङ्गनावक्त्र-कृतावमानो जगाम रोषादिव लोहितत्वम् ॥ २
 कृत्वापि सर्वस्य मुदं समृद्धा हर्षाय नाभूदभिसारिकायाम् ।
 निशासु या काञ्चन-तोरणस्यरत्नांशुभिर्भिन्न-तमिख-राशिः ॥ ३
 चीनांशुकैरभ्रजिह्वामुदय-प्रदङ्गायभागोपहितैर्गङ्गायाम् ।
 विटङ्गकोटिस्वणितेन्दु-दृष्ट-निर्मोक्षपट्टैरिव या वभासे ॥ ४
 दिदृक्षुरन्तःसरसीमण्डलं यत् खातहंसः समुदीक्ष्य वप्रम् ।
 सस्मार नूनं दृढ-क्रौञ्च-कुञ्ज-भागम्बुदो भागव-मार्गणस्य ॥ ५
 रण्यासु यस्यां रदिगो गङ्गायामादर्शभित्तौ कृतवन्धघाताः ।
 खविम्बमाणोक्ष्य ततं प्रमाद्यं चक्रुर्मदामोदमरिदिपानाम् ॥ ६
 जपैकभागं सितहर्म्य-प्रदङ्गे विस्तृत्य मन्देन समोरयेन ।
 दीर्घाकृतं वाण-मृद्याण-शुभ्रं करोति यच्च ध्वजकृत्यमभम् ॥ ७
 यस्यां युवत्यो विहिता विधात्रा रत्नैरिवापुर्वपुषः प्रकर्षम् ।
 प्रवाणशीर्षा वदनं सुवर्णं मुक्तामयाङ्गावयवा बहन्त्यः ॥ ८
 आलिङ्ग्य तुङ्गं वडभी-विटङ्गं विश्राणितात्मध्वनि पुष्करेषु ।
 यत्सौधकान्तेरिव संविभागं वज्रे सितं शारदमभ्यवृण्म ॥ ९
 प्रभा-विदृतिर्वितता पताका स्वासन्नजीमूतघटासु यस्याम् ।
 विद्युन्निभा काञ्चनपिङ्गरासु ततान् तेषां शिखिनामुदयम् ॥ १०
 यच्च क्षतोद्वह्नि-तामसानि रक्ताक्ष-नीलोपक-तोरणानि ।
 क्रोधप्रमोदौ विदधुर्विभाभिर्गरीजस्य भ्रमतो निशासु ॥ ११
 तन्नामवत् पंक्तिरथाभिधानो भर्ता सुवो भालुनिभः प्रभासैः ।
 क्षत्रान्वयैर्विजदण्ड्यमन्त्र-आवाचमानं जयमानमोजः ॥ १२

अखलम्भो मनुजेन्द्राणां मान्यो गुह्यज्ञो गुह्यजैर्मनोभ्यै ।
 दिशो यशोभिः शरदम्-शुभैश्चकार राजा रजतावदाताः ॥ १३
 जिगीषुराजावजनन्दनोऽसौ पूर्वं विजिग्येऽन्तरितानजय्यान् ।
 द्विषः घटभक्त-समस्त-शास्त्र-ज्ञानोपबद्धेन्द्रिय-वाणिवेगः ॥ १४
 तेनाकसत्वं पुरुषोत्तमेन वणिप्रतापापहविक्रमेण ।
 जैकोक्ता-दुर्लभ्य-सुदर्शनेन नामन्तभोगाभयिष्यापि तेने ॥ १५
 दयङ्कतस्तस्य भुवं जिगीषोः कम्पं वितम्बन् विहिताङ्गमर्हः ।
 तपैक-हेतुस्त्रिदशाधिपस्य दिशां श्वरस्तीव्र इवाविवेश ॥ १६
 समुद्रमुल्लङ्घ्य गतस्तदीयस्तेजोऽभिधानो गुहरभिराशिः ।
 नितान्त-सन्तापित-पूर्वकाष्ठः प्रोत्सेदयामास नृपं कटाहे ॥ १७
 भुजङ्गमप्रार्थित-सेयवेला काक्षीगुणाकर्षित-सार्थलोका ।
 दिग्दक्षिणा कर्कश-यत्न-भोग्या वेश्येव मुक्ता नृपरेण तेन ॥ १८
 विनिर्णिताऽप्यस्य शरेण घातं कण्धासुरासुप्रचसायुधस्य ।
 आत्मानमन्यैरसमानमानं मेने मग्नस्त्री युधि यावनेन्द्रः ॥ १९
 तेजश्चलेनाथ ऊताशनेन श्रीवासरस्यं प्रदहन् तुल्यकम् ।
 धूपैरिवासक्तगतैर्यशोभिराशौचमन्तं सुरभोषकार ॥ २०
 परेषु वात्पापरिहृष्टितोऽस्य क्रोधाभिधानो युधि चित्रभानुः ।
 आतामनेच्युत-वारिवर्षैरानायि शान्तिं रिपुकामिनीनाम् ॥ २१
 तस्यैकवाद्यासैन्यमग्नश्चोराणोकाभूमौ चरयारविन्दे ।
 आसेदतुः सर्वगरेन्द्रमौलिरत्नप्रभाजल्लकमखण्डगानि ॥ २२
 लोकास्तदीये भुवि हारगौरे कीर्त्तिप्रप्ताने प्रविष्टम्भमाने ।
 अभिन्नकोशं कुमुदं निरीक्ष्य सुमोच चन्द्रोदयशङ्कितानि ॥ २३
 समस्तसामन्तवृषोत्तमाङ्गान्यध्यास्य तस्योन्नतवृत्ति तेजः ।
 जम्बान् चूडागतपद्मरागरागच्छटाविस्फुरणक्षणेन ॥ २४
 नरेन्द्रचन्द्रस्य यशोवितानव्योत्खा महीमखण्डमखण्डस्य ।
 तस्यारिगारीनयनेन्दुकान्तनिष्ठन्दहेतुसुवर्गं तताग ॥ २५
 माता भविषी भवतुल्यसाक्ष इन्द्रदिवदमर्तुनिखुरनस्य ।
 तेनोपवेगे समर्थं विदित्वा अप्तेः समर्थं विधिवद्विधेया ॥ २६
 महैन्द्रकणस्य महाय देवाः स्फुरन्मयूखा शरविण्छावाम् ।
 पाददशान्ते निवपन्नकोशे मुक्तेव मुक्ताविवतिर्विन्दे ॥ २७

लीलागतोरत्र निसर्गसिद्धा मत्तो न दन्तौ मुषितो न हंसः ।
 इतीव जंघायुगलं तदीयं चक्रे तुलाकोष्ठधियोद्विगानि ॥ २८
 तस्या हतं मन्मथवाणपतिः शक्यं विधातुं न निमील्य चक्षुः ।
 ऊरु विधात्रा नु कृतौ कथं तावित्यास तस्यां सुमतेर्वितर्कः ॥ २९
 विन्वाधराया नवयौवनश्री-सम्पर्कतो वृद्धिमभिव्रजन्ती ।
 इतीव बद्धा रसनागुणेन श्रीश्री पुनर्वृद्धिनिषेधहेतोः ॥ ३०
 अस्थोदरस्य प्रतितुल्यशोभं गान्तीति धात्रा सुवनत्रयेऽपि ।
 संस्थानरेखा इव संप्रयुक्तास्तिलो विरेजु वलयः सुदत्ताः ॥ ३१
 वयःप्रकर्षादुपचीयमानस्तनद्वयस्योदहनश्रेण ।
 अत्यन्तकार्श्यं वनजायताक्ष्या मध्यं जगामेति ममैव तर्कः ॥ ३२
 अरालकेष्ट्या अलके विधात्रा विधीयमाने चक्षुर्लिकायात् ।
 श्रुतस्य विन्दोरसितस्य मार्गरेखेव रेजे नवरोमराजिः ॥ ३३
 तस्या सुखेन्दुं कुचचक्रवाकौ यस्मात्तु विस्लेषयति दयं नौ ।
 नायं शशी तत्प्रतितुल्यमन्यदिति स्म तर्कादिव पश्यतस्तौ ॥ ३४
 निर्जग्यतुर्वाणमृगालनालं सच्छिद्रवृत्तं किल दीर्घसूत्रम् ।
 सुस्लितसन्धौ शुभविग्रहौ तौ तन्मया भुजौ किं यदि तत्र चित्रम् ॥ ३५
 कान्तिप्रकर्षं दशनच्छदेन सन्धाघने बद्धपदं हरन्त्याः ।
 तस्या गृह्योद्यानसरोगतस्य हस्तस्य एवाम्बुदहस्य रागः ॥ ३६
 आसीदयं चन्द्रमसो विशेषस्तद्वत्तचन्द्रस्य च भासुरस्य ।
 विभर्त्ति पूर्वं सकलं कुरङ्गं तस्यैव नेत्रद्वितयं द्वितीयः ॥ ३७
 कान्तिश्रिया निर्जितपद्मरागं मनोऽक्षगन्धं दयमेव शक्तम् ।
 नवप्रबुद्धं जलजं जलेषु स्थलेषु तस्या वदनारविन्दम् ॥ ३८
 इन्द्रीवरस्यान्तरमेतदस्या नेत्रोत्पलस्यापि यतो हिमांशोः ।
 त्विषोऽपि नैकं सहते मुखाख्यमाक्रम्य तस्यावपरं शशाङ्गम् ॥ ३९
 युग्मं भ्रुवोश्चक्षुर्लज्जित-पद्म-सम्पर्कभौत्यासितलोचनायाः ।
 प्रोक्षन् दूरोत्तरं विधित्सु मध्येन तस्याविति मे वितर्कः ॥ ४०
 तत्केशपाशावजितात्मवर्द्धभारस्य वासः शिखिनी वनेषु ।
 लज्जां तिरश्चामपि जातु चेतश्चक्रे जगस्य स्पृशतीति शशाङ्गम् ॥ ४१
 दोषोऽपि यस्या सुवनत्रयस्य बभूव रक्तोभयनाशहेतुः ।
 अन्यापि कस्या जितसिद्धकन्या तादृश्या तस्य बभूव देवी ॥ ४२ ॥

CANTO I.

Translation.

1. In this earth there once was a great city of the name of Ayodhyā; a city that surpassed all other cities in respect of wealth and prosperity. So prosperous (was it, that it looked) as if it had fallen down from heaven by the weight of its great wealth. It was a city which was a great resort of the Kṣhātriya race, as the Samī tree is the constant abode of fire.

2. The moon became radiant by the reflected refulgence of the rubies that decked the spires of the lofty edifices of that city. Nay, her (the moon's) countenance became florid through jealous wrath at the sight of the superior charms of the fair females that lived there.

3. The opulence and prosperity of that city brought joy to all, except to young maidens that sought their lovers. For the lustre that issued from the gems of the golden gates of that city dissipated darkness and made night bright as day.

4. The glowing flags of China satin, which streamed in the sky from the lofty steeples of the mansions of that city, seemed like projections chiselled out from the moon.

5. The swans that were swimming in the moat surrounding the city-wall cast wistful looks towards the lakes of the city; but out of despair, owing to the lofty walls which stood in their way, they were reminded of the exploits of Paraśu-rāma, who by his arrow cut a passage through the Mount of Krauñcha.

A brief account of Bhāskara, and of the works written, and discoveries made, by him.—BY THE LATE PAṆḌIT BĀPU DEVA ŚĀSTRĪ, C.I.E.

[NOTE BY EDITOR.—The following paper was found amongst the papers of the deceased Paṇḍit after his death in 1890 and communicated to the Society, of which he was an Honorary Member, by his relations. It forms a portion of the preface to his revised edition of Mr. Wilkinson's translation of the *Golādhyāya* of the *Siddhānta Śiromaṇi*, published in the "Bibliotheca Indica," so far back as 1861. This preface was, apparently by an accident, not printed at the time, and the Paṇḍit kept it by him, and spent considerable pains over numerous and careful corrections, which he subsequently added. There seems to be no doubt that he intended to publish it on some future occasion, and there cannot be a better place for its appearance than the *Journal* of the Society of which he was so long a valued member.]

Bhāskara was born in 1036 of the *Sālivāhana* era—or in the year 1114, A. D.—Some authors mention that he was an inhabitant of Bira, a Marāṭhā village; but he himself states, at the end of his *Golādhyāya*, that his native place was near the Sahyādri, or the Western Ghāts,

and it appears to me that he was an inhabitant of Vijapura, the ancient metropolis of the Karnatik. Some say that he was a Marāṭhā Brāhman follower of the Yajurveda; but his method of annotating, which is still current in the Karnatik in annotating poetical works, shews that he was a Kanarā Brāhman of Vijapura. His father, named Mahēśvara, was a very great Paṇḍit and Astronomer, and a virtuous man. He had acquired the title of *Achārya* (Doctor) in the assembly of the Paṇḍits.

Bhāskara studied all the sciences acquired by him with his father. It cannot be ascertained whether he or his father was patronized by any Rājā, or whether he was a rich or poor man. But it is certainly true that he was expert in science, a very great poet, and an excellent Astronomer.

In his time, Lalla's work on astronomy, called *Sishya-dhīriddhida-Tantra*, more usually styled the *Dhīriddhida* simply, was much used, as the *Siddhānta-Siromani* is at present. Bhāskara first made a commentary on Lalla's work, and then wrote his own work on astronomy, called *Siddhānta-Siromani*, in two parts, *Gaṇitādhyāya* and *Golādhyāya*, composing before it two introductory works: the first on Arithmetic, called *Pāṭi*, or *Līlāvati*, and the second on Algebra.* He compiled his excellent work *Siddhānta-Siromani* in the 36th year of his age, or 1150, A. D. Its first part, *Gaṇitādhyāya*, is divided into 12 chapters, viz. :—

Chapter I. Called the *Madhyagati*, which treats of the rules for finding the mean places of the planets, contains 7 sections.

Section 1. Kinds of time.

Section 2. Revolutions of the planets, &c.

Section 3. Rules for finding the *ahargana* (or enumeration of mean terrestrial days elapsed from the commencement of the Kalpa) and thence the mean places of the planets, &c.

Section 4. The dimensions of the *Brahmaṇḍa* (universe), and of the orbits of the planets, and thence the rules for finding the mean places of the planets.

Section 5. This section, called *Pratyabda-Suddhi* (the remainders of additive months at the beginning of each year), treats of rules for finding the remainders of additive months, subtractive days, &c., at the beginning of each year, the small *ahargana* (or enumeration of the days elapsed from the beginning of the current year) and thence the mean places of the planets.

Section 6. Determination of additive months and others.

Section 7. The *Deśāntara* correction, &c., and conclusion of the first chapter.

* [Or *Vijaganita*. Both have been translated by Colebrooke,—Ed.]

Chapter II. Called the *Spashṭa-gaṇī*, which treats of the rules for finding the apparent places of the planets.

Chapter III. Called the *Tripraśna*, treats of the rules for resolving questions on time, finding the positions of places and directions.

Chapter IV. Called *Parva-sambhava*, on the possibility of the eclipses of the sun and moon.

Chapter V. Of lunar eclipses.

Chapter VI. Of solar eclipses.

Chapter VII. Rules for finding the lengths of the shadows reflected from the planets.

Chapter VIII. On the rising and setting of the planets.

Chapter IX. On the phases of the moon and the position of the moon's cusps. *

Chapter X. On the conjunction of the planets.

Chapter XI. On the conjunction of the planets with stars.

Chapter XII. Rules for finding the time at which the declinations of the sun and moon become equal.

The second part of the *Siddhanta-S'īromani*, called *Ālādhyāya* is divided into 13 chapters, with an appendix. Of this part the translation is given here.

[The translation of the *Ālādhyāya*, or Treatise on the Sphere, being now out of print, the following account of its contents is added for the sake of completeness :—

Chapter I. In praise of the advantages of the study of the sphere.

Chapter II. Questions on the general view of the sphere.

Chapter III. Cosmography, (including a refutation of the supposition that the earth is level).

Chapter IV. On the principles of the rules for finding the mean places of the planets.

Chapter V. On the principles on which the rules for finding the true places of the planets are grounded.

Chapter VI. On the construction of an Armillary Sphere. *

Chapter VII. On the principles of the rules for resolving the questions on time, space, and directions

Chapter VIII. The explanation of the cause of eclipses of the sun and moon.

Chapter IX. On the principles of the rules for finding the time of the rising and setting of the heavenly bodies.

Chapter X. On the cause of the phases of the moon.

Chapter XI. On the use of astronomical instruments, *vis.*, (1) the gnomon, (2) the vertical circle, (3) the *Phalaka* (invented by Bhāskara), (4) the *Yashī*, or staff, (5) the *Dhī-yantra*, or genius-instrument, (6) the self-revolving instrument, (6) the syphon.

Chapter XII. The seasons.

Chapter XIII. Useful questions,—a collection of problems. Ed.].

In this work Bhāskara has variously exposed the errors of Lalla, whose work he had formerly annotated.

We now proceed to mention the discoveries of Bhāskara.

1. He discovered that the earth has the inherent property of attracting all things around it,* and

2. That portion of the equation of time which is due to the inclination of the ecliptic to the equinoctial.†

3. He found out the *tātkālika*, or instantaneous motion of the variable quantities—the planet's longitude, and the sine of the arc.

Bhāskara says "the difference between the longitudes of a planet found at any time on a certain day, and at the same time on the following day, is called its rough motion during that interval of time; and its *tātkālika* motion is its exact motion."

The *tātkālika*, or instantaneous motion of a planet, is the motion which it would have in a day, had its velocity at any given instant of time remained uniform. This is clear from the meaning of the term *tātkālika*, and it is plain enough to those who are acquainted with the principles of the differential calculus, that this *tātkālika* motion can be no other than the differential of the longitude of a planet. This *tātkālika* motion is determined by Bhāskara in the following manner.‡

* * * * *

Now, the term *tātkālika* applied by Bhāskara to the velocity of a planet, and his method of determining it, correspond exactly to the differential of the longitude of a planet and the way for finding it. Hence it is plain that Bhāskara was fully acquainted with the principle of the differential calculus.§ The subject, however, was only inci-

* [Siddhanta-S'iromani. Chap. III, 6.—Ed.]

† [Siddhanta-S'iromani. Chap. V, 16, 17.—Ed.]

‡ [The calculations given by the author are omitted, as they have already been published in J. A. S., B, Vol. XXVII, pp 213 and ff.—Ed.]

§ [See, however, two papers by Spottiswoode in the *Journal* of the Royal Asiatic Society, Vol. XVII, p. 222 and Vol. XX, p. 345. Mr. Spottiswoode considered that the paṇḍit had overstated his case. He added 'Bhāskara undoubtedly conceived the idea of comparing the successive positions of a planet in its path, and of regarding its motion as constant during the interval, and he may be said to have had some rudimentary notion of representing the arc of a curve by means of auxiliary straight lines. But on the other hand, in the method here given, he makes no allusion to one of the most essential features of the Differential Calculus, viz., the infinitesimal magnitude of the intervals of time and space therein employed. Nor indeed is anything specifically said about the fact that the method is an approximative one.

Nevertheless, with these reservations, it must be admitted, that the penetration

dentally and briefly treated of by him, and his followers, not comprehending it fully, have hitherto neglected it entirely.

4. The ancient astronomers Ialla and others say that the difference between the mean and true motion of a planet becomes nothing when the planet reaches the point of intersection of the concentric and excentric. But Bhāskara, denying this, says that when the planet reaches the point where the transverse diameter of the concentric cuts the excentric, the difference of the mean and true motions becomes 0.*

For let p be the mean place of a planet at any time on a certain day, and p' that at the same time on the next day; and e and e' be the amounts of the equation respectively: then $p+e$ and $p'+e'$ will be the true places of the planet; $\therefore p'-p + (e'-e)$ will be the true motion of the planet; taking $p'-p$ the mean motion from this, the remainder $e'-e$ is the difference between the amounts of the equation. Thus, it is plain, that the difference between the mean and true motions of the planet is the rate of the increase or decrease of the amount of the equation. Therefore where the amount of the equation becomes greatest, the rate of its increase or decrease will be nothing; or the difference between the mean and true motions equals 0. But as the amount of the equation becomes greatest, when the planet reaches the point of the excentric cut by the transverse diameter of the concentric, (see the note on verses 15, 16 and 17 of Chapter V), the rate of its increase or decrease must be nothing; that is, the difference between the mean and true motions will be nothing at the same point. This is the principle of the maxima and minima, with which, it is thus evident, Bhāskara was acquainted.

5. He ascertained that when the arc corresponding to a given sine or cosine is found from the table of sines, this will be not far from its exact value, when it is not nearly equal to 90° or 0° respectively.†

6. He discovered the method of finding the altitude of the sun, when his declination and azimuth and the latitude of the place are given. This is a problem of Spherical Trigonometry, which he first solved by two rules in the *Gaṇitādhyāya*. Of these two rules, we have shown one in the note on verse 46 of the 13th Chapter of the *Golā-dhyāya*, and the other is the following:—

shown by Bhāskara in his analysis, is in the highest degree remarkable; that the formula which he establishes, and his method of establishing it, bear more than a mere resemblance—they bear a strong analogy—to the corresponding process in modern mathematical astronomy; and that the majority of scientific persons will learn with surprise the existence of such a method in the writings of so distant a period, and so remote a region.' Ed.]

* [Siddhanta-S'īromani. Chap. V, 39. Ed.]

† [Siddhanta-S'īromani. Appendix. Ed.]

Multiply the equinoctial shadow by the radius and divide the product by the cosine of the azimuth. Assuming the result as an equinoctial shadow, find the sine of an assumed latitude, i. e., finding the *Akshakarṇa* from this equinoctial shadow, say:—

as the *akshakarṇa*
 . the equinoctial shadow or the result
 :: the radius
 : the sine of assumed latitude.

Now the sine of the sun's declination multiplied by the sine of latitude of the given place gives the sine of assumed declination.

Add the assumed declination to the assumed latitude, when the sun's declination is south; but when the declination is north, subtract it. The result will be the zenith distance of the sun *

Demonstration. First of all he found the shadow of the gnomon, when the sun, revolving in the equinoctial, arrived at the given vertical circle, i. e., when the sun has the given azimuth, as follows:—

Draw a circle on a level surface with a given radius, and draw two diameters perpendicular to each other, east and west and north and south; then, at the equinoctial day, if we place a gnomon of 12 digits on the level so that the end of its shadow fall on the centre, the distance of the gnomon's bottom from the east and west line must be equal to the equinoctial shadow of the given place. Now draw a line from the centre to the gnomon's bottom and produce it. It will meet the circumference at the distance of the complement of the azimuth from the east or west point.

Then say—

as the cosine of the azimuth
 : the radius
 :: the distance of the gnomon's bottom from the east
 and west line, i. e., the equinoctial shadow
 : the gnomon's shadow.

From this shadow find its hypotenuse, then say

as the hypotenuse
 : shadow
 :: radius
 . the sine of the zenith distance when the sun is in
 the equinoctial having the same azimuth.

Call this sine the sine of assumed latitude.

Then by similar triangles—

as the sine of the latitude of the place in the plane of
 the meridian

* That is, assuming the given place of the observer to be in the northern hemisphere

- : the sine of the assumed latitude in the plane of the vertical
- *
:: the sine of the sun's declination in the plane of the meridian
- : the sine of the assumed declination in the plane of the vertical.

This is the sine of the arc of the vertical circle intercepted between the equinoctial and the sun's place.

Add this arc to the assumed latitude, or to the arc of the vertical circle from the zenith to the equinoctial when the declination is south; but when it is north subtract the arc, the result will be the zenith distance of the sun. Hence the rule.

Then he says that if the complement of the sun's azimuth be less than his amplitude, when he is in the northern hemisphere, the vertical circle will cut the diurnal circle in two points above the horizon. Hence on the same day the sun will enter the same vertical circle at two different times, and therefore the sun's zenith distance will admit of two different values. Bhāskara determined these two values thus:—

Subtract the assumed latitude above found from 180° . The remainder will be the second value of the assumed latitude. Then from these two values of the assumed latitude find the two different values of the zenith distance. The reason is very plain

7. The ancient astronomers, Lalla, Śrīpati, &c, erroneously used the versed sine and radius in finding the *valana* or variation (of the ecliptic). Bhāskara himself refuted their rules variously, and used the right sine and the cosine of declination in the place of the versed sine and the radius respectively (see the last portion following the 29th verse of the 8th chapter of the *Golādhya*).

8. It is stated in the *Sūryasiddhānta* and other ancient astronomical works, that the end of the gnomonical shadow revolves in the circumference of a circle, which Bhāskara boldly refuted.

Besides the above Bhāskara discovered many other matters which are not so important as to deserve mention here. He wrote an annotation called *Vāsanābhāṣya* on his work himself, the style of which is very good and plain. Before he wrote this commentary, he composed two other works,—one a *Karaṇa** and the other called *Sarvatobhadra-yantra*, to find the hour of the day. Both of these works are now extant. He wrote another *Karaṇa* in the 69th year of his age, which is now very common. It appears, therefore, that Bhāskara lived to the age of more than 69 years. After him, no great astronomer has appeared among the Hindūs up to the present time.

* A treatise on astronomical calculation, where the epoch is taken from the commencement of the work.

On some new or rare Muhammadan and Hindú Coins, No. III.—By

DR. A. F. RUDOLF HOERNLE. (With two Plates).

[For Nos. I and II of this series, see this *Journal*, Vol. LVIII, Part I of 1889, p. 30, and Vol. LIX, Part I, for 1890, p. 169. Compare also Vol. LII, Part I for 1883, p. 211.]

In the course of examining coins that are submitted to me under the Treasure Trove Act, I have come across some that deserve a fuller description than I could give them in my Reports to the Government.

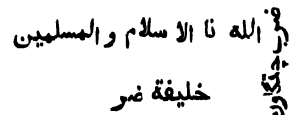
(A) COINS OF THE INDEPENDENT SULTANS OF BENGAL.

Towards the end of 1891 I received a lot of coins from Sibságar in Assam. Among them there were 38 coins of the Independent Sultáns of Bengal. In July 1892 I received another set of 23 coins of the same Sultáns from Bhágálpur. Reports on both finds are published in the Society's *Proceedings* for August 1893. Among these coins I found the following new types or new varieties of known types.

(XXXV.) JALÁLU-D-DÍN MUHAMMAD SHÁH.

817-835 A. H. = 1414-1431 A. D.

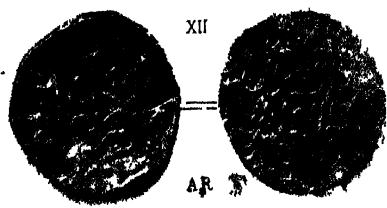
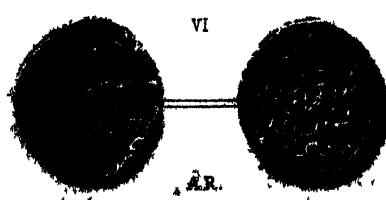
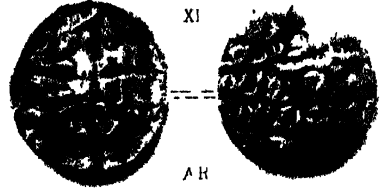
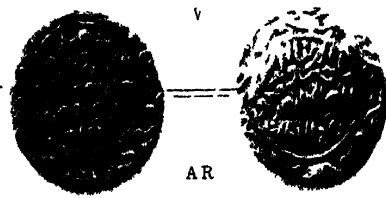
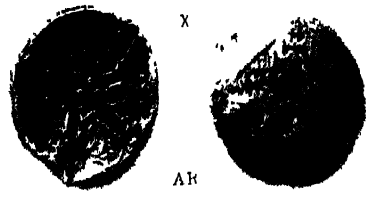
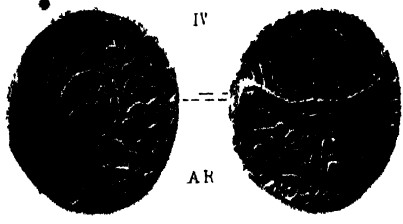
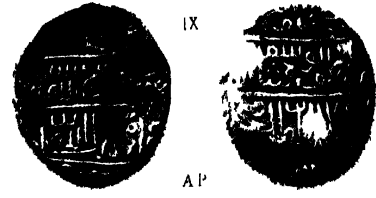
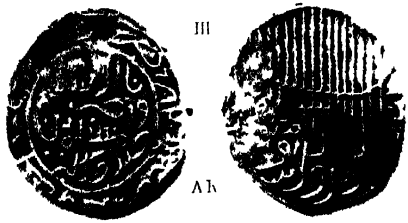
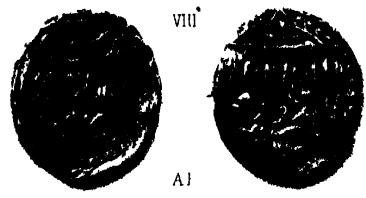
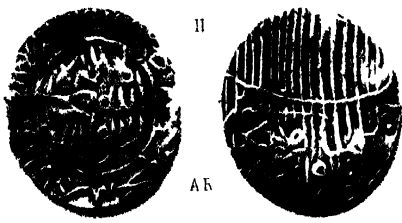
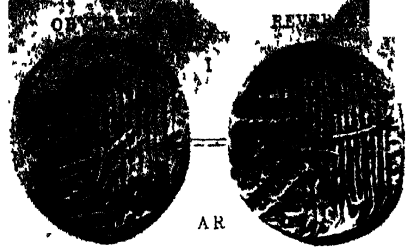
(1) See Plate VIII, fig. 1. Now in the Indian Museum. This is merely a new variety of the coin, published by Mr. Blochmann in this *Journal*, Vol. XLIII, p. 294, pl. XIII, No. 2, and in the British Museum Catalogue, No. 87. The legends on both faces are in tughra characters.

Obv.: 

The date 834, in very large figures, is on the left,* and the mint *Chatgán* on the right side, partly illegible. In the specimens published by W. Blochmann, the date as well as the mint is on the right side. On the British Museum specimen the mint is said to be beneath. But I doubt this; it appears to me to be the usual legend *خليفة ضر*. The date and mint would be on the sides, but the coin is too badly disfigured by cuts to show them.

(2) Plate VIII, fig. 2. Now in the Indian Museum. This is another specimen of that published in the British Museum Catalogue,

* Unfortunately, owing to a knob caused by a ~~slight~~ mark on the reverse, the date has not come out very clearly in the photograph. It is however, perfectly distinct on the coin itself.



No. 83, and I only publish it here, because it is in nearly perfect condition. The beginning of the name *Jalāl* is lost or disfigured in every other specimen I have hitherto seen. The mint also is a curiosity; for it seems to read (left-hand margin) *في الفيرزباد* *fi al-Fīrūzābād*. The more usual form is *في البلدة فيروزباد* *fi al-bildat Fīrūzābād*. The date is 824 (سنة ٨٢٤, bottom, margin). The whole margin reads:

ضرب هذا السكة في الفيرزباد سنة ٨٢٤

The date is in large sprawling figures.

(3) Plate VIII, fig. 3. Now in the Indian Museum. This is a new type which I do not remember having seen published anywhere. The obverse legend is new.

Obv. in circular area.

نا الاسلام

واضر

لمسلمين

خلد ملكه

Margin. ضرب هذه السكة في (.....) سنة ٨٣٣.

Rev. lettered surface with usual legend in tughra.

The date is 83(3?); the last figure may be 3 or 4. I cannot identify the mint name; it seems to be a new mint of 7 or 8 letters, ending in *h*.

(4) Plate VIII, fig. 4. Now in the Indian Museum. This is another new type, with an entirely new kind of obverse design. It consists of a small circular centre with the legend *عبد الجبار* *Abdu-l-Jabbār* 'Servant of the Omnipotent' Around is a broad inner circle and a narrow margin, both covered with arabesques. At the bottom of the margin there appears to be the date 8*5 (825 or 835), now partly obliterated by a shroff-mark.

The reverse has the usual legend in tughra, as, e.g., in the British Museum Catalogue, No 33.

(XXXVII.) NĀSIRU-D-DĪN MAḤMŪD SHĀH.

846-864 A. H. = 1442-1459 A. D.

This Sultān struck a very great variety of coins. Mr. Blochmann has published nine different kinds in this *Journal*, Vol. LXIII, p. 295 and Vol. XLIV, pp. 288, 289, Pl. XI, Nos. 2-9. I myself have published eleven other varieties in this *Journal*, Vol. XLII, pp. 217-219, Pl. XVI, Nos. 1-8 and Pl. XVII, Nos. 9-11. Here are four additional varieties.

1. Plate VIII, fig. 5. Now in the Indian Museum. This is a new variety of the same type to which "Col. Hyde's" coin, published by Mr. Blochmann in this *Journal*, Vol. XLIII, p. 295, belongs. The

peculiarity of this type is that both its margins are not filled with legends, but with various ornamental markings. The present coin differs from Col. Hyde's in showing on the reverse the "kunya" *Abul Mujáhid*, and bearing no date. There are also some other slight differences in the arrangement of the lettering and in the ornamental markings.

Obverse : in circular area :—

المريد
نائب الدين
خلقة الله
واهان
الحجج لبر

Margin : ornamental scrolls.

Reverse : in circular area :

الدنيا
ناصر الدين
ابوالمجاهد محمود
شاه السلطان

Margin : ornamental scrolls.

There is neither mint nor date.

2. Plate VIII, fig. 6. Now in the Indian Museum. This is merely another die of the same variety of coin, which has been published by Mr. Blochmann in this *Journal*, Vol. XLIV, p. 289, Pl. XI, No. 9, and by myself in Vol. LII, p. 218, Pl. XVII, No. 9. I publish it for three reasons. In the first place, because it is in very good condition and shows plainly the "kunya" *Abul Mujáhid*. In the second place, because it gives a new date; and in the third place, because it shows that my description given in Vol. LII, p. 219 is wrong. The obverse legend is not (as I then thought, being misled by the bad condition of the coin) distributed over area and margin, but area and margin have, each, their own distinct legend.

Obv. : in circular area :

نا الاسلام
واصرم
لمسلمين
خلد ملكه

Obv. margin :

ضرب هذه السكة
في سنة ٨٤٢ هـ

Rev. : in circular area, within
ornamental margin :

الدنيا
ناصر
والدين ابو
المجاهد
محمود شاه
السلطان

The date (just above of *Násir*) is 842. This is noticeable. The earliest proved date, hitherto known, of *Maḥmúd Sháh* was 846, and he reigned up to 864. Native historians give him 27 years (or even,

32) of reign. Accordingly his reign should have commenced in 638. Mr. Blochmann, after discussing the subject (Vol. XLII, p. 269), adds. "We require, therefore, more evidence to fix the beginning of Maḥmūd's reign." Here, then, we have evidence carrying that Sultān's reign back to 842.

The mint name I am unable to read satisfactorily, but it is apparently the same as that above on No. 3 of Jalālu-d-dīn Muḥammad Shāh. The first part, here, might be *al-Balad*; though, perhaps, the name is only a very crude way of writing *Īrūzābād*; compare the appearance of the latter name on No. 3, below.

There were five specimens of this coin. One has no date; another has 843; on the remaining two the unit figure is not distinctly legible, it may be 1 or 2 or 3. The specimen dated 843 is now in the British Museum. The undated specimen seems to be of the Mu'azzinābād mint.

3. Plate VIII, fig. 7. Now in my own cabinet. This is a new type.

Obv.: area in indented quatre-foil:

بِاِسْمِ
وَأَمْرٍ
لِّمُسْلِمِينَ
خَلْدَ مَلِكِهِ

Obv.: margin in sections:

upper left : ضرب هذِهِ
lower „ : السَّكَّةُ فِي
lower right : فيروزآباد سنه
upper „ : ٨٤٣

Rev. in circular area within ornamental border:

الدِّينِ
نَاصِرٍ
وَالدِّينِ ابْنِ
الْمُجَاهِدِ مُحَمَّدٍ
شَاهِ السُّلْطَانِ

No marginal legend.

It may be noticed that this is again a coin of the *Abul Mujāhid* type, and that the date is another early one of 843.

There were seven specimens of this coin; all, except two, dated 843. On the remaining two the date is lost. One of them is now in the Indian Museum, Calcutta; another, in the British Museum.

4. Plate VIII, fig. 8. Now in the Indian Museum; the only specimen of this kind in the find. It is apparently a duplicate of the coin published by me in this *Journal*, Vol. LII, p. 218, Pl. XVI, No. 4, but it is in much better preservation, showing all the peculiarities of this type of coin.

Obv.: in circular area,
within ornamental margin:

عوث الاسلام

ملكة

والمسلمين خلد

في فيروز آباد ٨٥٨

Rev.: in oblong double-lined toothed
area, within a circle surrounded
by dots:

الدنيا والد ابوالمظفر

ناصرين

محمود شاه [لسطان]

The toothed or fringe-like orna-
mentation is peculiar.

The date 858 is distinct. The mint *Īrūzābād* is probable.

I wish to draw attention to two points:—

Firstly, these new coins carry *Nāṣir*-d-dīn *Maḥmūd Shāh*'s rule back to the years 843 and 842. The end of his reign is well ascertained to have been in 864, by *Bārbak Shāh*'s inscription of 865 and *Maḥmūd*'s own coin of 864 (*Journal* LII, p. 216, No. 8b). This gives *Maḥmūd Shāh* a reign of, at least, 23 years, and goes some way in support of the statement of the native historians. Some of them say, that he reigned 32 years, others, that he reigned "not more than 27" years. These conflicting statements are susceptible of a not improbable explanation. Giving *Maḥmūd Shāh* 32 years, his reign would have commenced in 833. Mr. Blochmann (*Journal*, Vol. XLII, p. 268) shows with great probability, that *Shamsu*-d-dīn *Aḥmad Shāh*'s reign must have commenced in 834 or thereabouts. He was the third member of an usurping Hindú dynasty, and the native historians relate, that he was so cruel and tyrannical that *Nāṣir Shāh* (afterwards *Maḥmūd Shāh*), a descendant of the old Muhammadan dynasty of *Ilyās Shāh*, with the support of the old party, set up an opposition reign. What happened, I suppose then, was this: *Aḥmad Shāh* succeeded in 832; soon afterwards, in 833, *Maḥmūd Shāh* set up his counter-reign; *Aḥmad* certainly lived to 836, as shown by one of his coins (see this *Journal*, Vol. XLII, p. 268, and *Brit. Mus. Cat.*, No. 88), and he probably lived to 838, in which year accordingly *Maḥmūd Shāh* become sole and undisputed ruler of Bengal. Counting *Maḥmūd*'s reign from 833, we obtain a total of 32 years, but counting from 838, a total of 27 years.

Secondly, in this *Journal*, Vol. LII, pp. 212-216, I have fully proved, that *Maḥmūd Shāh* I made use of the two kunyats, *Abul Muḥaffar* as well as *Abul Muḥāhid*. I gave another proof of the use of two kunyats in *Journal*, Vol. LIX, p. 167. The coins I now publish add further proof, if any were needed. In the *British Museum Catalogue* published in 1885, I see, there are two coins still ascribed to *Nāṣir*-d-dīn *Maḥmūd Shāh* II (Nos. 103, 104), following herein Mr. Blochmann, who in 1878

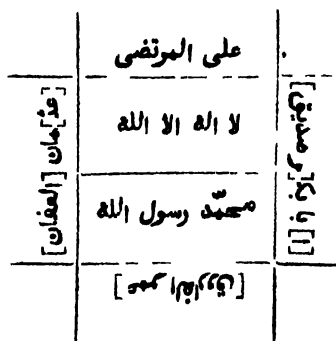
(*Journal*, Vol. XLII, p. 289) first ascribed that type of coin to Maḥmūd II. The only reason for this determination, given in the British Museum Catalogue (p. 42, footnote), is that this type of coin gives the kunyat *Abul Mujāhid*, which is said to distinguish Maḥmūd II from Maḥmūd I and Maḥmūd III, both of whom use the kunyat *Abul Muẓaffar*. I proved, already in 1883, that this reason was worthless; for Maḥmūd II uses both *Abul Mujāhid* and *Abul Muẓaffar*. Now the coin, British Museum Catalogue No. 104, is not dated, and therefore there is just a possibility that it may be a coin of Maḥmūd II (who, however, was a mere child and only reigned for six months); but there is no argument in support of that possibility, and the probabilities are all in favour of Maḥmūd I. He coined a great variety of types, and the style of the reverse of that No. 104 reminds one of the very similar style of Maḥmūd I's son and successor Bārbak Shāh in his coin (Br. M. Cat.) No. 90. For my part, therefore, I prefer to ascribe the coin No. 104 (Br. M. Cat.) to Maḥmūd I, until dated coins of Maḥmūd II are found to prove the contrary. For another striking instance of the use of two different kunyats see below under Shamsu-d-dīn Muẓaffar Shāh.

(XXXIX.) SHAMSU-D-DĪN YŪSAF SHĀH.

879-886 A. H. = 1474-1481 A. D.

(1) Plate VIII, fig. 9. Now in the Indian Museum. Only one coin of this type was found. It is an entirely new type.

Obverse: divided by four intersecting lines, so as to form a central square, with four exterior segments, the centre square itself being divided by a horizontal line into two equal oblong compartments. Thus —



The two central compartments contain the creed; the four segments, the names of the four Imāms, of which, however, only 'Alī's name is fully legible in the top segment.

The Reverse is divided into four parallel compartments by three horizontal lines. The legend is as follows:—

الدنيا ولد
شمس و دن
—————
لمظفر يوسف
ابو شاه السلطان
—————
نار بكشاه السلطان محمود
—————
[شاه | السلطان]

There is no mint name and date on the coin, so far as I can see.

(2) Plate VIII, fig. 10. Now in the Indian Museum. Only one coin of this kind was found.

Obv. in circular area
The Creed.
Below Mint and date
illegible.

Rev. in lozenge area: —

يا
ولد و
شمس لدن
ابو المظفر يوسف شاه
السلطان ابن نار بكشاه
السلطان ابن محمود
شاه السلطان

The marginal segments of the reverse are too much abraded to distinguish whether they bore any legends or merely ornamental scrolls; probably the latter.

(3) Plate VIII, fig. 11. Now in the Indian Museum; only one coin of this kind.

Obv. in circular area:

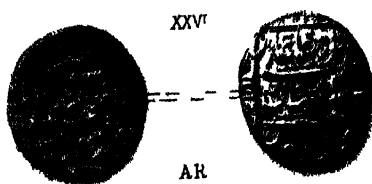
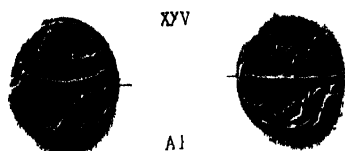
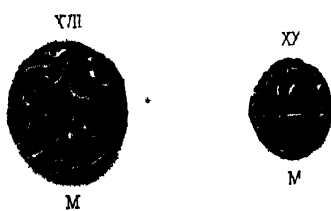
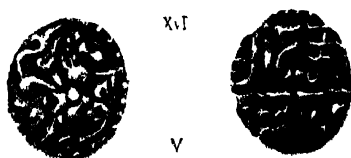
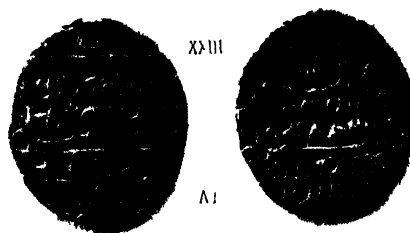
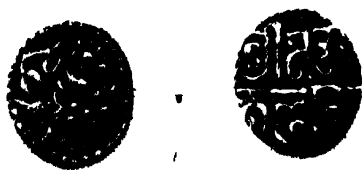
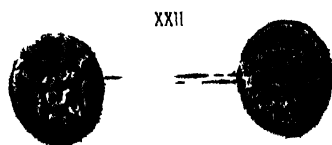
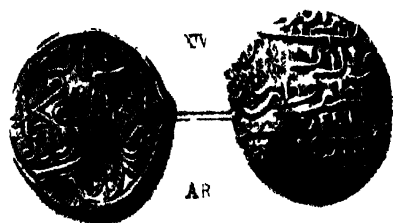
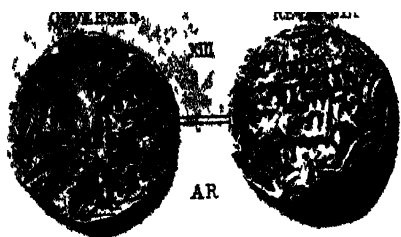
لا اله
الله محمد
رسول الله

Rev: lettered surface:

(الدنيا و الدين)
شمس دن
ابو السجاده نو
شاه ابن نار بكشاه ابن
(محمود شاه السلطان)

There appears to have been no mint or date on this coin; at least I can discover no space for them.

What is particularly noteworthy, however, is that here we have again further evidence of the use, by the same king, of the two *kufiyats*



Abul Muḥaffar and *Abul Muḥāhid*. The usual kunyat of Yūsuf Shāh, on coins and in inscriptions, is *Abul Muḥaffar*, but on the present coin it is *Abul Muḥāhid*.

(XLI) JALĀLU-D-DĪN FAIḤ SHĀH.

886-892 A. H. = 1481-1486 A. D.

1. Plate VIII, fig. 12. Now in the Indian Museum; only one coin of this kind. It is a new variety of the type, given in the British Museum Catalogue, No. 97. The only difference is in the arrangement of the lettering on the reverse.

Obverse :
The Creed
Below خزانہ ۸۹۰
(Treasury, 890 A. H.)

Reverse :
السلطان (ابن)
السلطان جلال الدنيا
والدين ابو المظفر
(فتحشاه السلطان ابن)
[محمود شاه السلطان]

2. Plate IX, fig. 13. Now in the Indian Museum, only one coin of this kind. This is a new variety of the type described in the British Museum Catalogue, No. 98. The latter is not figured, but, to judge from the arrangement of the lettering, I assume it to be the same as that published by Laidlay, in this *Journal*, Vol. XV, p. 329, No. 15. There the legends are in circular areas within ornamental margins. In the present coin, the arrangement is as follows:—

Obv. area,
double-lined octagon within a circle

السلطان
ابن السلطان
جلال الدنيا
والدين ابو
المظفر

Rev. area,
double-lined octagon within a circle :

فتحشاه
السلطان [ابن]
محمود شاه السلطان
الحميد شاه
محمود باد ۸۸۰

The mint is clearly Muḥammadābād, and the date 88*. The unit figure unfortunately is deleted by a shroff mark.

The riddle of this coin is the correct reading of the phrase in the fourth line of the reverse. This phrase is undoubtedly the same as that which occurs in the third line of the British Museum Catalogue, No. 95, and of this *Journal*, Vol. XLII, pl. IX, No. 8. Mr. Blochmann (p. 282) read it on the latter coin as محمد الله افندي. This is unques-

tionably wrong, as the letters on the coins are not so many. The British Museum Catalogue (p. 39) reads it *الحسين شاهي* *al-Ḥusain Sháhí*. On the coins, however, there is no letter (*s*) but the letter (*m*). The latter is distinct enough, even in the photograph of the British Museum specimen, but it is quite unmistakable on the present specimen. Accordingly I prefer to read *al-Ḥamíd Sháhí*. This phrase *al-Ḥamíd Sháhí* is probably of some historical importance. The similar phrase *al-Ḥusainí* is found on coins of the king 'Aláu-d-dín Ḥusain Sháh, where it is applied to Sayyid Ashraf, the father of Ḥusain Sháh. It distinguishes Sayyid Ashraf as belonging to the line of Ḥusain. In the present case the term *al-Ḥamíd Sháhí* is applied to Maḥmúd Sháh, the father of Fath Sháh, and distinguishes him as belonging to the guild of Ḥamíd Sháh. Now the Riyázu-s-Sulatin (Bibl. Indica ed., p. 108, see also Stewart's *History of Bengal*, p. 93, and *Journal*, Vol. XLII, p. 260, footnote) relates that the king Ghiyáṣu-d-dín 'Azam Sháh was a pupil of a Shaikh Ḥamídu-d-dín of Nagor, whom he used to visit to be taught divinity. Such holy men are not uncommonly popularly called by the title of *Sháh*. Accordingly Ḥamídu-d-dín would be popularly known as Ḥamíd Sháh, and pupils of his, or men professing his guild, would be called *Ḥamíd Sháhí*. Sultán 'Azam Sháh would be known as *al-Ḥamíd Sháhí* or 'the pupil of Ḥamíd Sháh'; and this honorific epithet would be retained by his direct descendants. It would, thence, follow that, in all probability, Maḥmúd Sháh was a younger son of 'Azam Sháh, his elder brother, who succeeded 'Azam Sháh, being Ḥamzah Sháh. Maḥmúd Sháh, in the histories, is simply described as a son of one of the descendants of Ilyás Sháh; and he took possession of the throne, after the short-lived usurpation of the Hindú family of Rájá Kans, on that title of being a descendant of the old legitimate royal family. If I am correct in my combinations, this coin of Fath Sháh would thus prove that Maḥmúd was a son (if not a grandson) of 'Azam Sháh. 'Azam Sháh, probably reigned up to 799 H., and Maḥmúd Sháh's usurpation, probably (see *supra*), commenced in 833 H. He may, therefore, have very well been a younger son of 'Azam Sháh, being, at the time of his usurpation, a man of between 40 and 50 years. In fact, Maḥmúd Sháh may, in his early youth, have still known Ḥamíd Sháh, and have accompanied his father in his visits to the saint.

(XLV.) SHAMSU-D-DÍN MUZAFFAR SHÁH.

896-899 A. H. = 1490-1493 A. D.

1. Plate IX, fig. 14. Now in the Indian Museum; only one coin of this kind. It is a new variety of the type published in the British Museum Catalogue, No. 105, and by Leach in this *Journal*, Vol. XV,

p. 331, No. 19. There is a slight difference in the arrangement of the lettering, but the main difference is the use of the kunyat *Abul Muẓaffar* instead of the usual *Abun-Naṣar*, and in the absence of *khazānah*.

Obv.: lettered surface:

Rev.: in circular area:

لا إله	[الدنيا]
إلا الله محمد	شمس
رسول الله	والدين ابو
۸ * ۸	المظفر مظفر شاه
(8 = 8 A. H.)	السلطان خلد
	لله ملكه و
	[سلطانه]

The date, of course, must be 898. The curiosity of this coin is the kunyat *Abul Muẓaffar*. Its letters are absolutely distinct, which is more than can be said for the kunyat *Abun Naṣar*, which is usually read on his coins. I have never met with any specimen on which *Abun Naṣar* could be read with equally absolute certainty; at the same time, I admit, that the reading *Abun Naṣar* on those coins (as on Br. M. Cat., No. 105) is very probable. Any how, the kunyat *Abun Naṣar* as the usual one of *Muẓaffar Shāh* is proved by his inscriptions which uniformly give it to him (see this *Journal*, Vol. XLII, p. 290.) Here, then, we have another evidence to confirm the fact that more than one kunyat might be used by the same king. I may add that Blochmann in this *Journal*, Vol. XLIII, p. 297, footnote, affords another evidence in the fact that Aurangzib uses the two kunyats *Abuẓ Zafar* and *Abul Muẓaffar*, on his coins and in his inscriptions respectively. He calls this a "confusion" (whose?), but it is simply a well-established practice of some kings.

(B) COINS OF THE KALACHURI KINGS OF CHEDI.

In January last, I received from the Political Agent of the Chhatís-garh Feudatory States, Raipur, 56 old coins which, on examination, turned out to be coins of some of the Kalachuri kings of Chedi. A report on them has been published in the Society's *Proceedings* for April last. These coins had been found in the Sarangarh State. In May last, I received three more Chedi coins, which had been found in the bed of the river Ang, in the state of Patna, and, a report on which is published in the *Proceedings* for August last.

As these coins, as far as I know, are the first of their kind ever found, or at least have never been published, I publish them now the more so, as in one respect I have altered my opinion published in the *Proceedings* for April last.

For information on the Kalachuri dynasty of Chedi I may refer to General Sir Alexander Cunningham's *Archæological Survey Reports*, Vol. XVII, p. 71 ff., and Professor Kielhorn's paper in the *Indian Antiquary*, Vol. XVII, pp. 135–138. On the accounts there given the subjoined genealogical list is based :—

Serial No.	Approximate date of accession.	Names of kings.	Actual dates from inscriptions.
1	1000 A. D.	Kokalla ...	
2	1030 "	Ratnarāja I ...	
3	1060 "	Prithvideva I ...	"
4	1090 "	Jājalladeva I ...	1114 A. D. (806 K. S.)
5	1120 "	Ratnadeva II ...	
6	1135 "	Prithvideva II ...	1141 (893 K. S.)* 1145 (896 K. S.), 1158 A. D. (910 K. S.)
7	1160 "	Jājalladeva II ...	1167 A. D. (919 K. S.)
8	1175 "	Ratnadeva III ...	1181 A. D. (933 K. S.)
9	1185 "	Prithvideva III ...	1190 A. D. (1247 V. S.)

The following is a list of the coins that have been found :—

Serial No.	Names of kings.	Found in Sarangah State.		Found in Patna State.		Total.		Grand Total.
		large	small	large	small	large	small	
1	Jājalladeva ...	9	17	2	1	11	18	29
2	Ratnadeva ...	...	29	...	...	...	29	29
3	Prithvideva ...	1	...	...	...	1	...	1
	Total ...	...	...	...	...	...	...	59

Two of the coins are of pure gold ; viz., one large coin of Jājalla (found in the Patna State), and the large coin of Prithvī Deva. All others are of mixed metal, containing gold in very varying proportions, which could only be determined by a regular assay. The other large coin of Jājalla, found in the Patna State, as well as his small coin, found there, appear to be of nearly pure gold.

In weight and size they are all practically alike ; that is, the larger coins measure 0·65, the smaller, 0·5 inches ; and the larger coins weigh 57 grains, the smaller, 15 grains. The large gold Prithvī Deva weighs 59 grains, and one large Jājalla Deva of mixed metal weighs only 56 grains ; also one small Jājalla, only 14 grains.

* See *Indian Antiquary*, Vol. XX, p. 84.

In design the coins are all alike. The margin is formed by a circle of dots. On the obverse is the crude figure of some animal, and on the reverse, the legend.

The legends are the following —

- I. Jájalla (Pl. IX, 15-19). II. Ratna Deva (Pl. IX, 20, 21.)

बीमज्जा *śrī-maj-já*

बीमद्व *śrī-mad-ra*

जालदेव *jalla-deva.*

रत्नेव *tna-deva*

- III. Prithví Deva (Pl. IX, fig. 22).

बीमप्र *śrī-mat-pri*

प्रीदेव *thvī-deva.*

The Jájalla coins of mixed metal show on the obverse of the large specimens the akshara **ना** *má*, on that of the small, **न** *ma*. On the obverse of the gold Jájalla and the gold Prithví Deva, in the corresponding places, there is also some mark, which seems to be some akshara, it resembles the numeral figure **५** (5).

What animal the figure on the obverse represents, I do not venture to say. At first, I thought it was the standing figure of Hanumán, and this opinion I expressed in my report, published in the *Proceedings* for April last, p. 92. This figure can be recognized, if one takes the coin (e. g., the gold Prithví Deva, Pl. VII, fig. 22) with the reverse (legend) side facing, and then turns over the obverse side, side-ways, from the right to the left. The obverse side, as then presented to the spectator, shows a crude figure of Hanumán standing, with his head turned to the left (showing profile), body to front, and feet to right; one of the two scrolls being his tail. The figure, of course, is very crude.

But I have since found, that holding the obverse side in a different position, other figures can be made out; and accordingly, I wish to withdraw, for the present, the conclusion which I drew from my recognition of the figure of Hanumán, in the April *Proceedings*, p. 93. If, instead of turning the gold Prithví Deva side-ways, from right to left, it be turned downwards from top to bottom, the obverse side, as now presented to the spectator, shows a distinct small figure of an elephant, in the lower half of the coin. His head, on the right hand side, is quite clear; his trunk is raised up and curves over; within the curve is seen one of his tusks; his body is encircled by a heavy chain (of the *howdah*); the up-turned tail is just seen on the left margin; the fore-legs are partially visible, the hind-legs are cut away. This much is very clear, but what the marks on the upper half of the coin may mean, I cannot make out, unless they can somehow be taken to represent a *howdah*. See No. 21 on Plate IX.

There is still a third possibility. Holding the obverse side, in nearly

the same position as for the elephant, it is just possible to recognize the figure of a bull (or a horse, or a lion), to the right, in the same recumbent position as seen on the so-called "Bull and Horseman" coins. See obverse of No. 15 on Plate IX. What was before the upturned trunk of the elephant, are now the fore legs of the bull turned under his body. A part of what might be the *howdah* (?) is now the head of the bull (or other animal), near the right hand margin.

I may add, that holding the coin in the position, now described, the akshara मि मा presents itself upright, which renders it probable that this is the proper position in which the coin should be held. See No. 17 on Plate IX.

All this requires some exercise of the imagination, and I will leave it to more experienced numismatic eyes to determine the real nature of the obverse figure. Only one thing appears to me impossible: to recognize in it any figure of the goddess "Durgá, four-armed, seated to front." And in this respect, the coins of the present finds still appear to me very noteworthy. For all coins of the Kalachuri dynasty that hitherto have become known, show on the obverse the figure of Durgá, which is also said to have been "the cognizance of the Haihaya or Kalachuri Princes of Chedi."*

It is impossible to say, to which of the kings of the above given list the coins may belong. Ratna Deva and Prithví Deva, both occur three times, and Jájalla Deva occurs twice. Coins (gold, silver and copper, see *Archæological Survey Reports*, Vol. X, p. 25) of the Kalachuri king Gangeya Deva are known; so also gold coins of a Kalachuri king, Prithví Deva† (see Prinsep's *Indian Antiquities*, Vol. I, p. 292, and Thomas' *Chronicles*, No. 17, p. 19.) All these, however, are of a different type. They show, on the obverse, the figure of Durgá, seated to front. No coin of any other Kalachuri king has become known before the finds now described by me. Gangeya Deva's date is about 1120–1140 A. D. There is an inscription of his, dated in (789 K. S.) 1038 A. D.‡ He must, therefore, have been a contemporary of Ratna Deva I. General Sir Alex. Cunningham has shown (*Survey Reports*, Vol. XVII, p. 71) that a Kalachuri king Gayakarna Deva was reigning in (866 K. S., or) 1115 A. D., in the very same year as Jájalla Deva I; and that, therefore, there existed two distinct kingdoms of Chedi, the one having its capital at Tripurí, on the Narbada, in Western Chhatisgarh; the other in Ratanpur, in Northern Chhatisgarh. Gangeya Deva was a king of Western

* Archæolog. Survey Reports, Vol. X, p. 25.

† That this is the Kalachuri Prithví Deva, and not a Chandel king, is shown by the form of the name. The Chandel is called Prithví Varmma.

‡ Archæolog. Survey Reports, Vol. XXI, p. 113.

Chhatisgarh or Dahál; he is called so in one of his inscriptions (*Archæolog. Survey Reports*, Vol. XXI, p. 113). It may be suggested, that the two Chedi kingdoms had coinages of distinct types. Western Chedi had the four-armed seated Durgá, while Northern Chedi had the coins which I have described in this paper. In that case the Prithví Deva, whose coins show the Durgá device, would not be identical with any of the three Prithví Devas in the list above given, which is a list of the Ratanpur kings of Northern Chedi. He would be another king of the Tripurí dynasty of Western Chedi.

(C) COINS OF THE SULTÁNS OF DELHI.

1. See Plate IX, fig. 23. This is a copper coin of uncertain attribution, which I discovered among the coins of the Asiatic Society of Bengal. It is clearly dated 841 H., and it shows the type current in those days in the mints of the so-called Pathán Sultáns of Delhi. Compare, *e. g.*, the small copper coins of Mubárák Sháh II (824-837), and Muḥammad Sháh IV (837-847). It bears, however, the name of Jalál Sháh. There is no Sultán of that name in the known list of the Sultáns of Delhi. Thomas, in his *Chronicles of the Pathan Kings of Delhi*, p. 375, mentions a Jalál Lodí, who was a brother of Ibráhím Lodí, and who was placed by the nobles of his own tribe of Lodí on the throne of the kingdom of Jaunpur. But Ibráhím's date is 923-937, and his brother Jalál's date is therefore too late for the present coin. The first known interference of the Lodís with the Delhi Sultanat is connected with Bahlol Lodí, the grand-father of Ibráhím Lodí and of the above-mentioned Jalál Lodí. He was nominally Governor, but virtually, master of the dependencies of Láhor and Surhind, under the Sultán of Delhi, Muḥammad Sháh IV bin Faríd (837-847). His aid was called in by that Sultán, to relieve him from the attack of Ibráhím, king of Jaunpur. This happened before '844, the date of Ibráhím's death. Bahlol's first mention, therefore, goes back to at least 844 H. (See Thomas, *ibid.*, pp. 320, 336). It might be suggested that Jalál may have been Bahlol's father; but his father's name is given as "Málik Kálá" in Beale's *Oriental Biographical Dictionary*. I referred the question to Mr. Rodgers, who possesses an unrivalled acquaintance with the Muhammadan coins of that period; but he was not able to throw any light on Jalál Sháh's identity. The coin reads as follows:—

Obverse :

فتح الدنيا
والدين

٨٤١

Reverse :

جلال شاه

نه

سلطان

I give the obverse legend, as Mr. Rodgers reads it, though I am not fully satisfied as to its correctness.

2. See Plate IX, fig. 24. This is a rupee of Sher Sháh from my own cabinet. It is of a well-known type, but I publish it for the sake of the strange reverse legend *علاء الدین* 'Aláu-d-dín, which is clearly shown in the bottom segment. It appears in the place, where one usually finds Sher Sháh's name *Faridu-d-dín*. I cannot account for this anomaly, nor can Mr. Rodgers to whom I referred the coin.

(D) COINS OF THE MUGHAL EMPERORS OF DELHI.

1. See Plate IX, fig. 24. This is a square rupee from my own cabinet. The date is perfectly distinct, 1010 H., and the coin, therefore, refers itself to Akbar's reign; yet its true attribution is not without difficulties. I referred the coin to Mr. Rodgers, who informed me that there are two coins like it in the Lahore Museum and that he possesses one specimen himself. He believes that they are "Jahangir's coins with Akbar's name, struck in Bengal." He reads the legends as follows:—

Obverse :	Reverse :
The Creed.	شاه سلیم ۱۰۱۰
	اکبر
	کا بروی ضرب
	سکه
	بنگالہ

He tells me that "Akbar," "Sháh Salím" and mint "Bangálah" are plain on one of the above-mentioned three coins. Jahangír succeeded his father Akbar in 1014 H.; his earlier name was Salím Sháh, which appears on some of his early coins, for which see British Museum Catalogue, Nos. 288, 289.

2. See Plate IX, fig. 25. This is a rupee of Jahangír, of the well-known type of the months of the Ilahí years. I publish it, however, for the sake of the mint Rohtás, which is a new one. The legends run as follows:—

Obverse :	Reverse :
اکبر	ماه اسفند ارجم
شاه شاه	ضرب ۱۹۹۰ رهناس
نگیر	
نور الدین جها	

3. See Plate IX, fig. 26. This is a new variety of the well-known type of Sháh Jahán's rupees with two straight-lined square areas. The novelty is that the square is made with double lines, resembling in this respect a certain variety of Sher Sháh's rupees, which is less rare, and a specimen of which is figured in the British Museum Catalogue, No. 544. Sháh Jahán's rupee of this variety is extremely rare. I have only heard of one other specimen, through Mr. Rodgers who informs me that he has seen it in the collection of Mr. Durkee, an American who visited India in the course of last year. The legends are the usual ones; there is, however, one peculiarity, that the Hijra date is given twice, while the Jalús year is omitted. The date is 1056, and is given in the top segment of the obverse, together with the mark of a "sword;" and it is given again in the bottom segment of the reverse with the mint Kaṭṭak (कलक).

POSTSCRIPT: The above was in print before I discovered that Jalál Sháh's coin (p. 243) had been already published in the Appendix to the British Museum Catalogue of "The Muhammadan States," No. 500, p. 168, among the "unidentified" coins. In a footnote, it is suggested by the author of the Catalogue that it belongs to the Gujarát group of coins, on the ground that it is "precisely similar" to the coins of Aḥmad I of Gujarát. It seems to me that the similarity is much more striking to some of the Delhi imperial issues, and that, therefore, the prince who issued these coins was more likely to have been one who "made himself temporarily independent" from a Delhi emperor than from a Gujarát king. The facsimile of the Brit. Mus. specimen confirms Mr. Rodger's reading of the obverse legend.

On a new find of old Nepalese Manuscripts.—By PANDIT HARA PRASÁD SHÁSTRÍ.

I have been fortunate enough to obtain through the good offices of my friend Bábu Kshirod Chandra Ráy Chaudhuri, Headmaster, Chapra Zilla School, a collection of ancient Sanskrit MSS. from Nepal. They are twelve in number, eleven of which have been acquired for Government. Five of them are Buddhist works, four of which are absolutely unknown to the learned world. Six of them are Hindu works, five of which are well-known; one only being new to the world. The twelfth work was marked unknown and appeared to be in utter confusion. The great merit of the five Hindú MSS. which are already well-known, and indeed that of the whole collection, is their ancient date. The MSS. were written between 1026 and 1481 A.D.

The most important works of this collection are two; namely, a commentary on the celebrated work on Buddhist philosophy entitled *Bodhicharyāvatāra*, noticed by the late Rājā Rājendralāl Mitra on page 47 of his work on the Nepalese Buddhist MSS. Mr. Bendall in his "Cambridge Catalogue" says that this work is the 9th Section of the well-known *Āśokāvadānamālā*. It is divided into 10 chapters, and is perhaps the only work in which four of the six *pāramitās* have been fully explained. Though it is a part of the *Āśokāvadāna*, it is always regarded as a separate work on account of the importance of its philosophical doctrines, which are couched—as all such doctrines are—in a language scarcely to be understood without a commentary. And such a commentary is furnished in one of the twelve works in the new collection.

The commentary is by Prajñākara who is styled *Paṇḍita Bhikṣhu*, i. e., a learned monk. Bābū Sarat Chunder Dās tells me that Prajñākara was a famous disciple of the still more famous Dīpaṅkara Śrī Jñāna of Vikramaśīla who introduced the reformed Buddhist faith into Tibet, where he is known as Atīśhā. This is probably correct. The MS. was copied by one who, from the use of the phrase *Prajñākara-pādānam*, appears to have been Prajñākara's disciple. The work was copied in the year 198 of the Nepalese era, i. e., 1078 A.D., and Dīpaṅkara's journey to Tibet is said to have been undertaken in the year 1066. Atīśhā was about seventy when he was invited to Tibet, and it is quite possible that one of his young disciples wrote a running commentary on one of the most important works of Buddhist philosophy, and that it was copied by a pupil of this disciple.

As a specimen of the commentary, I subjoin an extract from page 213A to the end:—

Text अजरामरलीलानामेवं विहरतां सताम् ।

आयास्यन्त्यापदो घोराः कृत्वा मरणमयतः ॥ P. 45, a. B. 42.

Comm. अजर इत्यादि । न विद्यते जरा जीर्णता येषां तेऽजराः । न म्रियन्ते येऽमराः । तेषामजरायाममरायामिव लीला विचेष्टितां येषां ते तथोक्ताः तेषामेव-मगदा लीलय विहरतां निश्चितं विचरतां सतामायास्यन्ति लौकिक्यन्ति । आपदो निरन्तरं सर्वे ते दुःखहेतवो जरायाधिविपत्तयः । घोरा अतीवभयङ्कराः कथमायास्यन्ति । कृत्वा मरणमयतः । मरणमप्रतीकारपरिहारं मृत्युमयतः पुरतः कृत्वा । इतथोक्तं भगवता राजाववादसूत्रे, तद्यथा, महाराज चतसृधो दिग्भ्यश्चत्वारः पर्वता आगच्छेयुः दृष्ट्वा सारवन्तः अलङ्कृतः अस्मिन्नाः असुशिराः सुसंभृताः दक्षप्रायाः नभःस्पृशन्तः पृथिवीक्षोभित्वन्तः सर्वमन्त्रकादृशास्त्रापर्वणाश्चादि

सर्व्वसत्त्वप्राप्तभूतान् निमग्नन्तः तेभ्यो न सुकरं जवेन वा प्रजायितुं वक्ष्येन वा
 द्रव्यमन्तौषधैर्वा निवर्त्तयितुं । एवमेव महाराज चत्वारि इमानि महाभयानि
 आगच्छन्ति । येषां न सुकरं जवेन प्रजायितुं वक्ष्येन वा द्रव्यमन्तौषधैर्वा निवर्त्त-
 यितुं । कतमानि चत्वारि जरा व्याधिर्मरणं विपत्तिश्च । जरा महाराज आग-
 च्छति यौवनप्रमथ्यमाना, व्याधिर्महाराज आगच्छति आरोग्यं प्रमग्नन्, मरणं
 महाराज आगच्छति जीवितं प्रमथ्यमानं, विपत्तिर्महाराज आगच्छति सर्व्वः
 सम्यत्तीः प्रमग्नन्ती । तस्माद्धेतोः । तद्यथा महाराज सिंहो मृगराजो काय-
 सम्यत्तीर्जवसम्यत्ती जातगखदंष्ट्राकरालो मृगगणमनुप्रविश्य मृगम्
 मृहीत्वा यथाकामकरणीयं करोति स च मृगराजोऽतिवर्णं .. घातमुख-
 मासाद्य विवशो भवति । एवमेव महाराज विद्वस्य मृत्युशक्त्येनापगतमद-
 स्यान्नाशस्याप्रतिश्रयस्यापरायणस्य मर्म्मसु क्खिद्यमानेषु मांसशोणिते परिशु-
 द्ध्यमाणे परिद्वेषितविद्वज्जवदनस्य करचरणविक्षेपाभियुक्तस्याकर्मिण्यस्यासमर्थस्य
 कालासिंधानकपृथूमूत्रपूरीषपरिणिप्तस्य ईषज्जीवितावशेषस्य कर्मभवात्पुनर्भव
 मानन्ममानस्य यमपुत्रबभयभीतस्य कालरात्रिविश्रगतस्य वरमान्वासप्रन्वासेषु
 धूरकप्रमाणेभ्येकाकिनोऽद्वितीयस्यासहायस्य इमं लोको जहृतः परलोकाक्रामतो
 महापथं व्रजतः महाकान्तारं प्रविशतः महागहनं समवगाहमानस्य महा-
 कान्तारं प्रपद्यमानस्य महार्णवेनोद्धमानस्य कर्मवायुना गीयमानस्य निमिती-
 क्कतां दिशं व्रजतो नान्यत्ताणं नान्यच्छरणं नान्यत्परायणं .. ते धर्म्माधर्म्भो हि
 महाराज तस्मिन् समये जायं जयनं शरणं भवति । तद्यथा श्रौतासंस्याभिप्रतापः,
 अभिमध्यगतस्यापि निर्व्वर्षणं, उष्यार्हस्य वा श्रौत्यं, आधानं प्रतिपन्नस्य सुश्री-
 तज्ज्ञायोपवनं, पिपासितस्य सुश्रीतणं सजिणं, बुध्दितस्य वा प्रणीतमन्नं, व्याधि-
 तस्य वा वैद्यौषधिपरिचारकाः, भयभीतस्य वज्रवन्तः सहायाः साधवः प्रतिश्रयणा
 भवन्तीति विस्तरः । तस्मादेतत् भयपरीहारायं कुशलपक्षेभ्येव प्रज्ञापरिशोधितेषु
 यतः करणीयः ।

एवं दुःखाभितप्तानां ज्ञानिं कुर्यामहं कदा ।

पुण्यमेवसमुद्भूतेः सुखोपकरणैः स्तकैः ॥ P. 45, b. B. 42.

इदानीं जात्यादिदुःखविज्ञानां दुःखापहरणाय साधयमाशङ्क्यमाह, एव-
 मित्यादि एवमवन्तरोक्तया गीत्वा दुःखाभितप्तानां दुःखाप्येवापयः तैः स-
 न्नापितानां सत्त्वानां ज्ञानिं जात्यादिदुःखानवतापप्रशमनं कुर्यामहं कदा

कस्मिन् कावे कुत्रां विद्मः । कथं सुखोपकरणैः स्वकैः सुखसुखोप-
करणानि सुखसाधनानि वस्त्राभरणानुषेधनशयनासनप्रभृतीनि । किन्नादुपार्जि-
तैरेव नेत्यादि, स्वकैः स्वात्मोपैः मया स्वयमुपार्जितैरित्यर्थः । किं निम्नाद्यादि-
प्रदर्शितेनेत्याह पुण्यमेघसमुद्भूतैः । पुण्यान्वेव मेघाः सर्व्वदुःखसन्तापार्तिशमन-
सुखोपकरणशीतलघुप्रदाननिदानत्वात् । तेभ्यः समुद्भूतानि जातानि तैः ।

कदोपलम्भदृष्टिभ्यो देशयिष्यामि शून्यताम् ।

सम्बृत्त्याऽनुपलम्भेन पुण्यसम्भारमादरात् ॥ P. 45, b. B. 42.

एवमभ्युदयसम्पदि परेषां चेतो विधाय निःश्रेयसम्पदि प्रदर्शयन्नाह ।

कदेत्यादि । कदा कस्मिन् कावे उपलम्भदृष्टिभ्यो भावयाद्वाभिनिष्ठेभ्यो देश-
यिष्यामि प्रकाशयिष्यामि शून्यतां सर्व्वधर्म्मनिवृत्तिरूपावहार्येण । अन्यथा वि-
कल्पाविषयतया परमार्थशून्यस्य शून्यताया देशयितुमशक्यत्वात् एवं निःश्रेयस-
हेतुज्ञानसम्भारनिमित्तमुपदर्शितं तत्कारणं पुण्यसम्भारनिदानमुपदर्शयन्नाह ।
पुण्येत्यादि । पुण्यस्य दानादेः सम्भारो.....दृष्टिभ्यो देशयिष्यामि
इति सम्बन्धः । आदरादिति महता । गौरवेण । संहृत्य न यदृष्ट्या केन प्रका-
रेण अनुपलम्भेन देयदायकप्रतिग्राहकादिचित्तबानुपलम्भयोगेन त्रिकोटिपरि-
शुध्यति यावत् एवमुपचितपुण्यसम्भारो बुद्धत्वाधिगमाय जायते तदेवमनेन सर्व्व-
नाशेषसंक्षेपहेतु सर्व्वसमारोपविकल्पप्रतिपक्षतया सर्व्वान्तर्यामिप्रदानोपायत्वात्
समस्ततथागताधिगमहेतुत्वाच्च । सर्व्वदुःखोपशमोपायप्रज्ञोपजायते इत्युपदर्शितं
भवतीति ।

ये गम्भीरनयावगाहनपटुप्रज्ञानिरस्तम्भमाः

संक्षेपश्रव्यवदानपक्षविमलज्ञानोष्णिताः शूरयः ।

ते सक्तो गुणदोषयोरपि च तैः सारं विमिश्रादतो

ग्राह्यं सर्व्वमकल्पमं विषमिव त्वान्यं दुरुक्तं यदि ॥

न युक्तमुक्तं किमप्यौह यन्मया परं प्रजातं स्थणितं तदेव मे ।

ननु यदीह्यन्ति ममात्र साधनो मविर्ममानेन ज्ञतेन साम्प्रतं ॥

अपि च ।

यः संहत्वा प्रजति मगसो गोचरत्वं कथञ्चित्

तादृशार्थं दृष्टवति न मतिः कस्य वै मादृशस्य ।

तत् सत्त्वार्थप्रविशयवतामध्यमावैविभावाम्

दृष्ट्वा किञ्चिद्वचनवमिह स्यादुपादेयबुद्धिः ॥

* प्रज्ञया विवृतिं विधाय विषदयाख्यापदैः संवृतं
सम्यक्ज्ञानविषयवृद्धिविधितया मोहशान्त्या मया ।
यत् पुण्यं समुपार्चितं हितफलं तेनामु सर्वा जने
मञ्जुश्रीरिव सद्गुणैकवसतिः प्रज्ञाकरो जायतां ॥

बोधिचर्यावतारे प्रज्ञापारमितापरिच्छेदटीका समाप्ता । कतिरियं पण्डित-
भित्तु प्रज्ञाकरपादागां ।

टीकेयं परमां सुयन्त्रितपदां शुद्धां मनोज्ञादिनीं
संसारार्णवपारगामिनि जने नौयानयात्रोपमां ।
आशुप्राप्तिकरीं जिनस्य पदवीं साद्योस्त्रिखित्वा मया
प्राप्तं यत् कुशलं सुसम्पदिपदं तेनास्तु बुद्धो जनः ॥
अष्टानवतिसंयुक्ते शतसम्पत्ति वत्सरे ।
कृष्णे आवणपद्म्यां वासरे कुजसाङ्गये ॥
श्रीमच्छङ्करदेवस्य राज्ञो विजयशालिनः ।
बोधिचर्यावतारख्यटीकाखित्यामिदं शुभं ॥
श्रीललितपुरे रम्ये श्रीमानीश्वरसंज्ञके ।
यश्वीराधवनाम्नस्य विहारे सुगताजये ॥
धन्य स्यविरमिहोस्य बुद्धचन्द्रस्य पुत्रकं ।
तत् पुण्याद्बोधिसत्त्वत्वं लभते परमं पदं ॥ इति
विद्वज्जनु सज्जनं घनो यथेष्टं भवतु मही बद्धशस्य संप्रयुक्तं ।
अवतु नरपतिः प्रजा विनाम्नाः भवतु रथनपतेः सुखाभिरुद्धिः ॥ इति ।
कायस्थः सुवनाकरवेण खितितमिति ।

The commentary comes down to the end of the 9th chapter of the *Bodhicharyāvatāra*, the chapter dealing with *Prajñāpāramitā*. The first* page of the MS. is missing; others are missing here and there, and the number of missing pages is about 29.

The second important work is a complete copy of the *Chāndra-vyākaraṇa*, which represents one of the eight great schools of Sanskrit grammar as stated in the celebrated verse:—

इन्द्रचन्द्रः काशकृत्वापिशलीशकटाक्षः ।

पाणिन्यमरकौनेन्द्रा जयन्महादिशाब्दिकाः ॥

A complete copy of this book is a great desideratum. Mr. Bendall's catalogue of MSS. in the University Library of Cambridge mentions
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two MSS. of this work, but both of them are incomplete. One MS. was transcribed in the Nepal year 476 corresponding to 1356 A.D., and the palæography exactly corresponds with that of the 14th century as given in Mr. Bendall's Tables of letters and numerals. It was written at a time when all Nepal was in a state of confusion, owing to a Kōśala invasion led by Hari Singh of Simraon. The MS. was copied by Kshemendra, the principal *Āchārya* of a *Vihār* named *Yosvāccha* (?), in the reign of *Rājādhirāj-paramesvara-paramabhattachāraka-śrī-śrī-vijaya-rāja-deva*—a king whom it is very difficult to identify. Mr. Bendall is perfectly right when he says that “the *Chandra-vyākaraṇa* follows Pāṇini both in style and treatment and often in actual words, many of the *Sūtras* being identical.” This is also the case with many other grammars, some of which have been compiled simply to avoid the study of the cumbrous and diffuse Pāṇini. Mr. Bendall also says that the *Chandra-vyākaraṇa* is divided into six *adhyāyas*, each of which again is sub-divided into four *padas*, though in my MS. the 6th *adhyāya* contains 3 *padas* only.

The next work in importance is a complete copy (one leaf only missing) of the *Amara Kosha* written in the month of Chaitra in the 24th year of Govindapāla Deva whose accession to the throne of Magadha in the year 1161 is known from an inscription in Vol. III of Cunningham's Archeological Report. Thus his 24th year corresponds with 1185 A.D. I have compared portions of the MS. with the printed text of Colebrooke. In the printed text there are metrical colophons at the end of every *kāṇḍa*. But the MS. has no metrical colophons. The last colophon of the MS. is simply *Līnga-saṃgrahaḥ samāptaḥ*.

Many lines and verses, which are known in latter MSS. as interpolations, do not occur in our MS.—for instance, the synonyms of *Lakshmi* occupy two lines in ordinary MSS. and printed texts of the *Amara Kosha*, whereas our MS. has only one line; and many old pandits whom I consulted, and who in their early youth committed the whole of the work into memory, told me that the second line was always regarded as an interpolation.

The fourth work is a copy of the *Chandakausika* by Ārya Kshemiśvara, dated 1331, A.D.* So the writing of this work also falls within the period of confusion in Nepal. The Sanskrit scholarship of Nepal at that time was so poor that they could not correctly ascertain the name of the work, but labelled it, in the same character in which the whole book is written, as *Harischandra-vikrīya-pustakam*.

चन्द्रेश्वरस्यै नमः श्रीपादो यजिवाकरे

पौषेन्द्रदि पञ्चम्यां शुद्धं श्रीरामदासतः ।

Five leaves, from *three* to *seven*, are missing. The book is in other respects complete, and it affords many readings which are much better than those found in the Calcutta editions of the work.

The book contains some hints about the time when it was composed in the following couplet :—

यः संश्रित्य प्रकृतिगणनामार्थं च। षष्ण्वनीतिम्
 चत्वारि मन्दात् कुसुमनगरं चन्द्रगुप्ते जिगाय
 कर्षाटलं ध्रुवमुपगतानय तानेव चक्षुम्
 दोर्दपायः सपुनरभवत् श्रीमद्योपासदेवः ॥

Mahipāla has been put down by Cunningham as the 11th king of the Pāla dynasty whose reign commenced in the year 1015. But the question is who the Karnātas, mentioned here, were? Are they the people of Karnāta, or do they belong to the dynasty of Karnātas who reigned in Mithila and Nepal for a long time in the next two centuries. On page 99, Vol. I. of South Indian Inscriptions, Dr. Hultzsch speaks of a Mahipāla Deva whose dominions extended to the sea, and from whom eleven elephants were wrested by Rājendra Chōra Deva of the Sūryavamśa, who reigned from A. D. 1022 to 1063. This is Mahipāla of Magadhā, who reigned from 1015 to 1010. The Pālas made extensive conquests at this period of their existence. One of their dynasty has been placed by Albiruni on the throne of Kananj about this period, 1020. There is every probability of the Mahipāla mentioned in Chandakausika being the same person as the Mahipāla of 1015 to 1040. He had to fight with a South Indian Prince—a Karnāta. The Karnātas were the enemies of Hemanta Sena the great grand-father of Ballāla Sena. Hemanta retired to a place on the Bhāgirathī, in Bengal, after a life-long contest with the Karnātas, and his grandson, Vijaya, is said to have defeated Nānya Deva, the founder of the Karnāataka dynasty of Nepal. (Epigr. Ind., Vol. I.). These reigned in Nepal for several generations (see Bendall's Catalogue) and the Maithila King under whose patronage Chandēśvara wrote his Smṛiti works and led his victorious armies to Nepal, also belonged to the Karnāataka dynasty. (See Eggeling's Cat. I. O. L. MSS.)

The work was very popular at Mahipāla's court where a nobleman named Kārtika gave the author Ārya Kṣhemīśvara a large quantity of gold, silver, and land, as appears from the last verse.

वेनीदिक प्रवीनं वनपुष्पकधना नाटकसायनं चर्षात्
 वस्त्रावकाशः चैवामुदिनमकृत्वा रण्यः सन्मदना

तस्य चषप्रसूते भंनतु जगदिदं कार्तिकेयस्य कौर्त्तिः

पारे श्रीराम्यसिन्धोरपि कवियशसा सार्द्धमपेक्षरेण ॥

A drama describing the self-sacrificing spirit of Hariśchandra cannot but be interesting to a Buddhist audience.

The fifth work is *Suddhiratnākara*, by Chandeśvara. The work has been noticed by the late Rājā Rājendralāla Mitra in his *Notices of Sanskrit Manuscripts*, Vol. VII, No. 2384, as belonging to one Bhaiyālāla Jhā, of Dhamdaha-grām in Purnia. The India Office Library has a very imperfect copy of the work, in which both the beginning and the end are missing. The MS. is one of the seven great works of Chandeśvara's digest. Pages 2, 3, 6, 7, 8, 9, 10, 39, 77, and some leaves at the end, in our MS. are missing. The MS. is a much better one than the India Office copy, which is in modern Bengali characters; while ours is in ancient Bengali, and may, on palæological grounds, be referred to the 14th century.

The sixth work is *Buddha-kapāla-tīkd*. This is a commentary on the *Buddhakapāla*—a Buddhist tāntric work not yet obtained. The MS. was copied by a pupil of the author—Abhayākara, a monk belonging to the Vihāra of Vikramaśīla. The work is complete in 14 *paṭalas*. The name of the commentary is *Abhaya-paddhati*. On palæographical grounds the work may be referred to the palmiest days of Vikramaśīla, in the 11th and 12th centuries of the Christian era.

The seventh work is *Saṅgīta-ratnākara*, in ancient Bengali character, dated ३६२, i. e., 1481 A. D. The work is complete in three chapters, and deals with instrumental and vocal music and dancing. It has marginal notes in Nepalese handwriting. It has already been printed and published at Calcutta.

The eighth is *Sampulodbhava*, written in Buddhist Sanskrit prose in the style of the *Prajñāpāramitā*. The MS. is complete, the first two pages are slightly injured, so portions of them are mounted with paper in which the injured portions of the text have been restored in a later hand. It is a Tāntric work consisting of ten chapters, each divided into three to four *prakaraṇas*. It was copied in 146 of the Newari era, i. e., 1026 A.D.

The ninth work is *Vajradāk-tantra*. This is a Tāntrik work in 51 *paṭalas*, treating of mystic *mantras* and mystic observances. The invocation of serpents, Dākinīs, dead bodies, &c., forms the chief feature of the work. The work is incomplete and breaks off with the 225th leaf.

The tenth work of the collection is a beautiful copy of the *Prajñāpāramitā* in 8,000 *ślokas*. The work is on palm leaves pressed between two wooden boards, with sticks inserted through holes in place of

strings. One of the boards is besmeared with sandal paste, which has accumulated there for ages. The MS. was evidently an object of worship and as *Prajñāpāramitā* is also called *Rakshī-Bhagavatī* it appears to have been regarded as a charm for protection against evils. The MS. was copied in the 38th year of Govindapāla who is styled Gaureśvara, i. e., the year 1198 A.D. Govindapāla had certainly lost his kingdom before that time, because his kingdom is not mentioned as a *pravardhamāna-rājya-rājya*, as usual, but as an *atīta-rājya*, i. e., that his kingdom was lost but he was living, perhaps a fugitive. Three of the MSS. belonging to the same reign have been examined by Mr. Bendall at Cambridge. In one of them, that belonging to the 38th year of this reign, occurs the word *vinashṭa-rājya*, showing that the kingdom was lost at that time. The word used in our MS. is *atīta*, which is the same as *vinashṭa*. The book was copied at Jayanagara in Magadha Maṇḍala at a Vihāra established by Rāpi Khetallya Devi by Jaināchārya Śrīkanalapāla. It was a gift by a lay disciple belonging to the Mahāyāna School named Maluka (?), the son of Maharohasoshṭane (?). Jayanagara at this time was a sort of second capital of Magadha. Cunningham says it was situated near Lakhmiserai. That it was a place of importance is testified by two facts: (1) by the discovery of a number of inscriptions in the 12th century character, and (2) by a number of coins in the Indian Museum, belonging to this place. The rulers of Jayanagara seem to have held a semi-independent authority under the Pālas. Govindapāla in this MS. is called the king of Gaṇḍa; this was a mere title. He had no authority in that city which was under the power of the Senas, and Lakshmaṇa Sena is said to have changed its name into Lakshmaṇavātī, and one of his inscriptions is dated from Paṇḍravardhana, which is by many and, indeed, by the late Mr. Blochmann, identified with Hazrat Padua, so near Gaud.

I have compared the first few leaves with the printed text of Dr. Rājendralāla Mitra, and I found them to agree perfectly. This work has not been acquired.

The eleventh MS. is a collection of Śaiva tantras. On a careful examination of the whole MS. it appears to be a collection of six Śaiva works. (1) *Sivapadma*, 12 complete chapters, (2) *Sivapadmottara*, complete in 12 chapters, (3) *Sivapadma Saṁgraha*, complete in 12 chapters, (4) *Umā Maheśvara Saṁvāda*, 21 chapters, not complete. Works of this name, belonging to the Skanda and to the Linga Purāṇas, are mentioned in Aufrecht's Catalogue, but there is no good notice of these works. (5) *Sivopaniṣad*, complete in eight chapters. This is different from the *Sivopaniṣad* by Harīhar, noticed by Rājendralāla Mitra. (6) *Uttarottara Tantra*, complete in 10 chapters. The work can safely be placed on paleographic grounds in the 12th century.

The twelfth MS. is labelled as unknown. The first page is missing and the end is far away. On examination it is found that pages from 2 to 210 exist, with the exception of the 129th page. The handwriting is beautiful, much older than the rest of the collection. On examination it proved to be a portion of the *Vrihat-kathā*, about a-tenth of the whole work. It is not Somadeva's *Kathā-Saritsāgara*, nor Kshemendra's *Vrihat-Kathāmañjarī* because in both these works the chapters are divided into *lambakas* and *taraṅgas*, whereas in the present MS. it is divided into *adhyāyas* and *sargas*. The work contains one complete *adhyāya* and a portion of the second. It has altogether 26 *sargas*, the colophons of many of which do not give any information at all. But in some of them appear these significant words, *Vrihatkathāyām-śloka-saṅgrāhe*. In the colophons appear the names of the *sargas*; they often contain proper names, none of which I have been able to identify either in Kshemendra's or in Somadeva's work. So this fragment appears to be a third Sanskrit redaction or version of the original Pālisāhi *Vrihat-kathā* by Guṇādhyāya, and the MS. which has been labelled 'unknown' by my Nepalese vendor, turns out to be the most important work of the whole collection.

The letter क in this MS. has a more archaic form than in most of the Nepalese MSS., which leads me to think that this MS. is of higher antiquity than the rest. The क has the turn of the Gupta-lipi. I may therefore be allowed to venture to say that I have laid my hands on a work copied even before Kshemendra and Somadeva wrote their works on the *Vrihat-Kathā*. Bühler, in his paper in Vol I, Ind. Ant., says that Kshemendra had the Pālisāhi version of Guṇādhyāya before him. Might not he have consulted a big Sanskrit version, too, from which to abridge? I have read the first *sarga* in my MS. It treats of king Gopāla renouncing the world, because people calumniated him as a parricide, and making over his kingdom to Pālaka, his brother, in spite of the remonstrances of the Brāhmaṇas. This is a very large work, the first *adhyāya* alone containing more than 4,200 *ślokas*. While Kshemendra's whole work, according to Bühler, consists of a little more than 7,000 *ślokas*. I give here the colophons of this work.

					पञ्चाङ्गः ।
दृष्टव्यायां श्लोकसंयहे प्रथमः सर्गः	...	...	...	...	५
द्वितीयः सर्गः	...	...	...	...	८
दृष्टव्यायां श्लोकसंयहे कथामुखम् द्वितीयम्	...	...	...	...	१५
पिङ्गलिकाख्यानं	...	...	...	...	२१
दोहद्वयस्यादयो नाम सर्गः	...	...	...	...	२६

						पद्याङ्का ।
कुमारजन्म सर्गः	...	...	...	...	...	३८
शौवराण्याभिषेकः सर्गः	...	...	...	...	...	४२
मृगयाविहारः सर्गः	...	...	...	...	...	४५
पुष्पिनदर्शनः सर्गः	...	...	...	...	...	५०
कथासंज्ञापो नाम सर्गः	...	...	...	...	...	६३
श्लोकसंग्रहे मदनमञ्जुकाशः	...	...	...	...	...	६८
वेगवतीनाभे उद्याननिष्ठयो नाम द्वादशः सर्गः	...	...	...	...	...	७२
वेगवतीदर्शनो नाम त्रयोदशः सर्गः	...	...	...	...	...	७५
बृहत्कथायां श्लोकसंग्रहे वेगवतीदर्शनं नाम चतुर्दशः सर्गः	...	...	...	...	...	८१
वेगवतीनाभो नाम पञ्चदशः सर्गः	...	...	...	...	...	८८
गन्धर्वदत्ताशामरस्यप्रबन्धो नाम षष्ठदशः सर्गः	...	...	...	...	...	९२
गन्धर्वदत्ताविवाहः	...	...	...	...	...	१००
बृहत्कथायां श्लोकसंग्रहे कानुदासकथा	...	...	...	...	...	११०
इति बृहत्कथायां श्लोकसंग्रहे अजिनमतीनाभे नक्षत्रिकाख्यानं	...	...	...	...	...	१३६
प्रियदर्शननाभदेवाख्यानं	...	...	...	...	...	१६८
पुरुषकारकथायां प्रथमोऽध्यायः	...	...	...	...	...	१७४
प्रियदर्शननाभे पुरुषकारकथा	...	...	...	...	...	१८२
प्रियदर्शननाभे मन्दोपनन्दकथा	...	...	...	...	...	१८६
प्रियदर्शननाभे गोमुखविवाहाख्यानम्	...	...	...	...	...	१८७
प्रियदर्शननाभे प्रियदर्शननाम्नदर्शनः	...	...	...	...	...	२००
प्रियदर्शनविवाहः	...	...	...	...	...	२०६

Note on the Official Reckoning of the reigns of the later Moghul Emperors and on some of their Mint Towns.

By W. IRVINE, Esq., I.C.S. (retired.)

In the Philological Secretary's Report on a recent find of coins (Proceedings for June 1893, p. 116), I see that he adopts 1069 H. (Sept. 1658—Sept. 1659), as the year from which Aurangzib 'Alamgir's reign is reckoned. On grounds which I think are overwhelmingly strong, I propose to substitute 1068 H. (Sept. 1657—Sept. 1658.)

Among European writers we find considerable difference of opinion as to the year in which 'Alamgir began his reign. To mention the latest writer first, Mr. S. Lane Poole, in his "The Moghul Emperors of Hindustan" (1892), p. xxvi, says "in May 1659 (1069) he," i.e., 'Alamgir, "was proclaimed Emperor." I see, however, that in his later work "Aurangzib" (1893) in the series "Rulers of India," Mr. Lane Poole dates the reign from July 1658 (see the Table on p. 21 of that work). Again, in the "Oriental Biographical Dictionary" of T. W. Beale, p. 33, we read "but 'Alamgir) was not crowned till the first anniversary of his accession, a circumstance which has introduced "some confusion into the chronology of his reign." This statement, in identical words, is found in Elphinstone's "History of India" (4th ed. p. 525), and he relies on Khāfi Khān. Grant Duff ("History of the Marattas," Bombay reprint, note on p. 72), although he prefers 1658 (i.e., 1068 H.) to 1659 as the correct year, seems to have suggested Elphinstone's remark. Grant Duff writes "Aurangzebe appears to "have begun by reckoning his reign from the date of his victory over "Dara, to have subsequently ascended the throne in the following year, "and then changed the date, which he again altered by reverting to "the former date (i.e., 1068 H.) at some later and unknown period." Grant Duff, like Elphinstone, relies upon Khāfi Khān. Now, Khāfi Khān (in the printed text, at any rate) is not to be altogether trusted in the matter of chronology; but I think that in this instance Grant Duff's note misrepresents the facts, even as recorded by Khāfi Khān.

Khāfi Khān founded his statements, as is tolerably obvious, on the *Tārīkh-i-dahsālāh* or *'Alamgir-nāmah* of Muḥammad Kāzīm, and on the *Ma,āṣir-i-'Alamgirī* of Muḥammad Sākī Mustaid Khān. The latter for the first ten years of the reign, is itself an abstract of Muḥammad Kāzīm's work (see p. 65 of the printed text of the *Ma,āṣir*). The facts, then as related in the *'Alamgir-nāmah*, the source from which all others are drawn, are as follows:—

Muhammad Kázim commences the second year (1069 H.) with a long excursus on the necessity for a system of chronology and the varying modes of reckoning time, with some remarks on Akbar's Divine Era and that followed by Jahángir. Those two sovereigns reckoned from the 1st Farwardín and used a solar year. He then informs us that Sháhjahán restored the use of the Muhammadan era; and that 'Alamgír followed his father's practice. "And although the first fortunate enthronement happened on the 1st Zú'l-ka'dh, 1068 H.; yet, the effulgence of victory and success and the rising of the world-illuminating light of that founder of the horoscope of felicity and prosperity having thrown the ray of joy on the world in the month of Ramzán of their year (1068 H. ?), and the appearing of the star of strength and perpetuity of that chosen one, full of splendour, having lighted up the face of Fortune and Good Luck in those days; the first day of that month of blessed omen, which was the new moon of limitless felicity and pregnant with both worldly and spiritual blessings, was chosen as the first day of the years of that reign, rich in mercies; and the exalted order obtained issue that in offices and calendars and patents and rescripts, they should make record after that manner, and reduce into writing after that fashion all occurrences and the reports of events. Accordingly, by the rule so fixed, I have to this point written with my descriptive pen the story of one year and twenty-four days belonging to the felicitous epoch of the sovereignty and empire of that One worthy of the faith-protecting throne. And previous thereto there are entered the events of four months belonging to the auspicious time of his being still only a Prince of the Blood, beginning from the day of the departure of the victorious army, intent on world-conquering and realm-seizing, from the province (khítah) of fortunate foundation, Aurangábád, which took place on the 1st Junádi I, 1068 H. (*in words*), ending" [*i.e.*, the said four months, Junádi I, Junádi II, Rajab, and Sha'bán, 1068 H.] "with the 1st of Ramzán of that year, which is the first day of the years of that reign full of happiness. Altogether the period covered is 1 year, 4 months, and 24 days. Then will follow the second year." After this passage he goes on to the festivities held to celebrate the accession, the abolition of the *Nau-roz* festival, and the substitution of another to be amalgamated with that of the 'Id-ul-fitr. Next, we have the appointment of a Muhtasib, or Censor, as in Muhammad Sáki. (*'Alamgír-námah*, B. M. Addl. MSS., Nos. 26, 229, foll. 102b. to 104a.) I have no copy of the printed text, and therefore cannot give references to it, but the passage can, I have no doubt, be very easily found.

Next in order of date comes Muhammad Sáki Musta'id Khán and

his *Ma,âşir-i-'Alamgîrî*. The parallel passage to that quoted above from the *'Alamgîr-nâmah* will be found on pp. 22-25 of the printed text. But I will turn first to an earlier page as it explains the circumstances of the previous enthronement in 1068 H. 'Alamgîr determined to proceed to the Panjâb in pursuit of his brother, Dârâ Shukoh. He set out from Akbarâbâd on the 22nd Ramzân, 1068 H. (23rd June 1658.) The astrologers having selected the 1st Zûl-ka'dh, 1068 H. (31st July 1658), or 11th Amardâd of the Ilâhî year, as the auspicious moment for his enthronement, and there being no time to proceed to the palace at Dihlî and there prepare for this august act, 'Alamgîr halted for several days at the garden of Agharâbâd [also called Shâlihmar, it was just north of Dihlî] to take advantage of the said propitious moment. There he seated himself on the throne of good fortune.....As the preparations for this ceremonial were on a limited scale, most of the observances of an enthronement were put off to the second anniversary (*jalûs*). On this occasion no *khuṭbah* was read, no coinage issued, and no imperial titles fixed upon. These matters were postponed. [*Ma,âşir-i-'Alamgîrî*, p. 8].

[*Idem*, pp. 22-25.] Year 1069 H. This corresponds to the extract above given from Muḥammad Kâzîm. "Since the ceremonial of "the first enthronement, by reason of the advance into the Panjâb and "from want of time, was on a reduced scale, while the reading of the "*khuṭbah*, the issue of coin, and the fixing of the imperial titles were "postponed; now that more important affairs had been arranged, orders "were issued to prepare for the festival" "And on the fortunate "day, Sunday, the 24th of the blessed month Ramzân, in the year "1069 H. (15 June 1659), or the 25th *Khurdâd* of the Ilâhî year, when "his age was 40 solar years, 6 months, and 17 days, or 41 lunar years, "10 months and 2 days, 'Alamgîr seated himself on the throne." The *khuṭbah* was read, coin issued, offerings presented, and gifts bestowed.

The Muhammadan creed was no longer to be impressed on the coin, but, instead, a distich, composed by Mîr 'Abd-ul-Bâkî, was approved. The new emperor's titles were settled; and *farmâns* issued to all provincial governors, announcing the new reign. Several chronograms for the occasion are given; these yield 1069 H. Then follow these words: "As the shining of the light of the victory diffused its felicitous rays "on the world in the month of Ramzân, the exalted order was issued "that they should record in offices and calendars the 1st of that month "as the commencement of the years of this reign." After this comes a passage about the abolition of the *Nau-ros* festival, and the institution instead of it of a festival to be called *Nishât-afroz*. It will be noticed that Muḥammad Sâkî does not expressly state the year, from the 1st

Ramzán of which the reign was dated. But neither he nor Muḥammad Kázim, from whom he copies, give any countenance to a reckoning commencing with 1069 H. On p. 30 and p. 34 we find that according to Muḥammad Sáqí, the third year (not the second) began in Ramzán 1070 H., the fourth year (not the third) in Ramzán 1071 H., and so on, throughout the book, to the end of the reign. For his period, the first ten years, Muḥammad Kázim follows exactly the same rule. Finally, Muḥammad Sáqí [*Maʿáṣir-i-ʿAlamgírí*, pp. 520 and 523] records that ʿAlamgír died early on Friday, the 28th Zú, l-ka'dh 1118 H. (2nd March 1707), in the 51st year of his reign, having reigned 50 lunar years; 2 months, and 27 days. This accords exactly with the mode of reckoning laid down by Muḥammad Kázim. For, if we calculate from the 1st Ramzán 1068 H. to the 28th Zú, l-ka'dh 1118 H.), we get as result (1118y. 10m. 28d.)—(1068y. 8m. 1d.)=(50y. 2m. 27d.). Kámwar Khán, in his *Tárikh-i-Saláṭín-i-ʿAḡláiyyah*, gives the same number of years, months, and days; but I attribute to him no independent authority for this reign, having found wherever I have compared the two authors, that Kámwar Khán gives Muḥammad Sáqí's facts, in identical order, but in different words.

I add two more extracts from Muḥammad Sáqí, as the second of them records a slight change in the observance of the anniversary, and this may have been the reason that Grant Duff thought the date of accession had been twice altered—[*Maʿáṣir ʿAlamgírí*, p. 30]. Year 1070 H. The third year of the reign commences. The anniversary ceremonies begin on the 24th Ramzán (4th June 1660). [*Idem*, p. 34]. Year 1071 H. The fourth year commences. "Although the date of enthronement (*sarír-áráí*) was the 24th Ramzán, and in the previous year "the festival began on that day, yet owing to its falling in the time of "the Fast, when there is no inclination to enter into rejoicings, the beginning of this year's festival was fixed for the day of the 'Id" (i.e., 1st Shawwál). It lasted ten days.

Kháfí Khán's passage, parallel to those in Muḥammad Kázim's *ʿAlamgír-námah*, and Muḥammad Sáqí's *Maʿáṣir i ʿAlamgírí*, will be found in the Bibliotheca Indica Text, Vol. II pp. 76-79. As it is translated, nearly in full, by Dowson in Elliot's *History of India*, VII, 241, I need not reproduce it here. I only note that Dowson's "4th Ramzán" is the 24th Ramzán in the printed text. Although Kháfí Khán here expands rather than contracts what Muḥammad Kázim wrote, it is strange that he omits the all-important statement that the reign was made to begin on the 1st Ramzán. I have looked through the text on pp. 76-80, and I cannot find any mention of this fact. Kháfí Khán, II, 549, gives the length of the reign as 50 years, 2½ months; and even these figures, though not

strictly accurate, preclude any reckoning from 1069 H., but carry the first day into 1068 H.

Again, I find in a somewhat later writer, Khushál Chand, author of the *Nawáhir-uz-Zamíní*, the following statement. He wrote in the reign of Muḥammad Sháh (1131–1161 H.) and was old enough to recollect the excitement caused in Dihlí by the news of 'Alamgír's death. He himself, like his father before him, was a clerk in the Central Revenue Office, and a man likely to have, if any one had, exact knowledge on the point under discussion. His words are: "Although the first auspicious enthronement took place on the 1st of the month Zú, l-ka'dh, 1068 H. (30th July 1658), yet as the blessed rays of the brilliant light of "victory and success were displayed to the world in the month of Ram-zán, the first day of that blessed month was assumed as the commencement of these years full of miracles, and the exalted order issued that "in all offices, and calendars, and patents of appointment, and royal "rescripts, this rule should be adopted, in opposition to that of previous "sovereigns, rulers in Islám who, following the practice of Jamshíd, "Kakhr (Kasrú?) and others, held Farwardín to be the most excellent "month, and appointed it for the commencement of their reigns. This "rule was now abrogated, and the years of the fortunate reign were appointed to be reckoned by lunar months from the month of Ramzán" [B.M. Addl. MSS. No. 24027, fol. 490b.] For this work and its author, see Elliot, VIII. 70, 71. Here he is evidently writing with Muḥammad Kázim's or Muḥammad Sáqí's work before him. The 1st Ramzán, 1068 H., is equivalent to the 2nd June 1658.

We can now account for Muḥammad Sáqí's statement (*Mu, ágir-i-'Alamgírí*, 523), that 'Alamgír reigned 50 years, 2 months, 27 days.

I think that these authorities prove, without any room for doubt, that 'Alamgír counted his reign from the 1st Ramzán, 1068 H., and after that date had been once fixed upon, no alteration was ever made. This is the result arrived at by considering the historical evidence alone. Do the extant coins of the reign conflict in any way with its historians? Now, there may be some reason for thinking that occasionally some numismatists (in this branch of their subject, at any rate), concentrate their attention too much on the coins themselves, to the neglect of contemporary historians from whom they might derive much assistance. For we are dealing here with a modern period, on the history of which there is an abundance of material available. Be that as it may, let us, too, confine our attention for the moment to the coins themselves. The coins of 'Alamgír, which are already to be found in the British Museum collection, constrain us, unless some of those coins are a posthumous issue, to throw back the initial year of the reign from 1069 H. to 1068 H.

Dated coins for the 51st year of a reign necessarily imply fifty completed years of that reign. Now, the silver coins Nos. 843-846 in the British Museum, are dated in 'Alamgir's 51st year. On the other hand, there is no dispute about the date of his death; it took place in 1118 H. Even if we allow up to the last day of that year, where can you find room, within that limit, for fifty completed years, unless you throw back the first day of the reign into some part of the year 1068 H.?

As I am led to believe, the argument for 1069 H. is founded on the rule that the enthronement, the reading of the *khutbah*, and the issue of coin, taken together, form of themselves the official act of accession. In cases where there is no proof to the contrary, I see no reason to quarrel with this assumption. Indeed, for some purposes, it might even be the only right date to consider. For instance, if I wished to fix the date from which 'Alamgir became undisputed sovereign, I should, with Mr. S. Lane Poole, elect for the year 1069 H. On the other hand, if a sovereign, in defiance of facts, chooses to fix an assumed or fictitious date for his accession, it is useless for us to say that he had no just right to do so. The all-important things for us are: 1st, to know that he ordered the adoption of such official date; and 2ndly, to ascertain, on the best evidence, what that date was. Of all the acts of sovereignty hardly one can be held more formal and official than the issue of coinage: and can we suppose that on the face of that coinage any date would appear, other than one fixed according to official reckoning? Over and over again, we find that the official reckoning and the date of accession, according to actual facts, are altogether discrepant. It is so in the case of 'Alamgir.

BAHÁDUR SHÁH. His father died at Ahmadnagar, in the Dakhin, on the 28th Zú'l-Ka'dh, 1118 H. (2nd March, 1707). He heard of the event at Jamrud, west of Pesháwar, on the 18th Zú'l-Hajj, [*Kámwar Khán, Táríkh-i-Salátn-i-Chaghataiyah*, my copy, and Jag Jivan Dás, Gujarátí *Muntakhab-ut-Tawáríkh*, written in 1120 H., [B.M. Addl. MSS. No. 26,253]. He was enthroned at Pul-i-Sháh Daulah Darvesh, about 15 miles west of Láhor, in Muharram 1119 H. Muhammad Kásim, Láhorí, *'Ibrahnámah*, India Office Library, No. 252, and Jag Jivan Dás, already cited). Muhammad Ali's *Burhán-ul-Fatúh* (B.M. Oriental MSS. No. 1884, fol. 162b.), fixes this enthronement on the 24th Muharram (26th April 707). He gained a complete victory over his brother Azam Sháh at Jájan, near Ágrah, on the 18th Rabí' I. 1119 H. (18th June 707)—(*Dánishmand Khán, 'Ali takhallus "Jangnámah,"* and *Kháfí Khán*, II, 590). But on the 1st Shawwál 1119 H. (25th Dec. 1707), he issued an order that his reign should commence from the 18th Zú'l-Hajj, 1118 H. (22nd March 1707), the day that he heard of his father's death

[Dánishmand Khán, 'Alí, in his *Bahádur Sháh-námah*, entry of the said date and Kháfi Khán, Text II, 607]. The passage in Dánishmand Khán reads as follows: "The 1st Shawwál, 1st year, Ghási Rám, principal "clerk to the Chief Intelligencer, or *Wákháhnigár-i-kul*, made a report "asking for orders fixing the date from which the reign was to be "reckoned, that the same might be entered in the official proceedings. "Orders issued to take the 18th Zú'l-Hajj, and a report was called for "as to the New Year's day by the solar year. In reply this was stated "to be the 1st Farwardín and a Sunday. That day was accordingly "fixed and ordered to be recorded." [B.M. Oriental MSS. No. 24, fol. 95a.]. This may mean that the 1st Farwardín or the 18th Zú'l-Hajj was adopted. If the former, that would be the 10th or 11th March, equal to the 5th or 6th Zú'l-Hajj, 1118 H.

JAHÁNDÁR SHÁH. As he did not survive to begin a second year's reign, there does not appear to have been any order passed fixing an official date for his accession. He was enthroned in the plain east of Láhor on the 21st Šafar, 1124 H. (29th March 1712) [Núr-ud-dín, Multání, *Jahándár-námah* and Kámwar Khán, *Tárikh-i-S.-i-Ch.*], his father, Bahádur Sháh, having died on the 20th Muḥarram, 1124 H. (27th February 1712) [Kámwar Khán].

FARRUKHŠIYAR. He heard of his father Āzím-ush-shán's death near Láhor, when he was himself at Paṭnah-Āzímábád. He was enthroned there, in the *bagh* known as Afzal Khán's, on the 29th Šafar, 1124 H. (6th April 1712) [Muḥammad Aḥsan, Ijád, *Farrukh-siyar-námah*, B.M. Oriental, No. 25, fol. 40a.]. On the 9th Jumádi II, 1125 H. (2nd July 1713), he ordered that Jahándár Sháh's reign should be struck out of the records and treated as non-existent. He directed at the same time that his own reign should be dated from his enthronement at Patna, namely the 29th Šafar, 1124 H. [Kámwar Khán, *Tárikh-i-S.-i-Ch.*: entry of 9th Jumádi II, 1125, and Khushál Chand, B.M. Or. 3288, fol. 397a.] Kháfi Khán, II, 737, has the wrong year, 1123 instead of 1124. He and Khushál Chand have the 1st Rabí' I, which is, of course, the next day to the 29th Šafar, so that there is no practical difference, on this point, between them and Kámwar Khán.

RAFÍ'UD DARJÁT. As he reigned for a few months only, no order was passed fixing officially the first day of his reign. He was enthroned in the palace at Dihlí on the 9th Rabí' II, 1131 H. (28th February 1719) [Kámwar Khán, *Tárikh-i-S.-i-Ch.*: and Kháfi Khán, II, 816]; he was deposed and sent back into the palace on the 17th Rajab, 1131 H. (4th June 1719), and he died there on the 24th of the same month (11th June 1719) [Kámwar Khán, and Kháfi Khán II, 830].

RAFÍ'UD-DĀULAH. This prince was the next elder brother of the

preceding. At his brother Rafi'-ud-darjât's earnest request he was selected as successor, and raised to the throne some days before his predecessor's death. The enthronement took place in the palace at Dihli, on the 19th Rajab, 1131 H. (6th June 1719) [Kámwar Khán, but Kháfi Khán, II, 831, has the 20th]. The prince died in camp near Aghrah, on the 4th or 5th Zú'l-Ka'dh, 1131 H. (17th or 18th Sept. 1719) [Kámwar Khán]. In his case also no question can arise, as he did not survive to enter a second year.

NEKÚSIYAR. This pretender, son of Prince Muḥammad Akbar, the fourth son of 'Alamgír, was proclaimed by the mutinous garrison from the battlements of Aghrah Fort, on the 29th Jumádí II, 1131 H. (18th May 1719) [see Kháfi Khán, II, 825, Kámwar Khán's *Tárikh-i-S.-i-Uh.*, and Muḥammad Kásim's *Ibratnámah*]. Nekúsiyar surrendered to Sayyad Husain 'Alí Khán between the 22nd and the 27th Ramḡán, 1131, H. (July 7-12, 1719) [Kámwar Khán].

MUḤAMMAD SHÁH. This prince was brought from Dihli and reached the imperial camp on the 11th Zú'l-Ka'dh, 1131 H. (24th Sept. 1719) [Kámwar Khán and Kháfi Khán, II, 840]. He was enthroned on the 15th Zú'l-Ka'dh, 1131 H. (28th Sept. 1719), at a village called Bidyápur, between Aghrah and Fathpur Sikri, three *kos* and a fraction from the latter place [Kámwar Khán and Kháfi Khán, II, 840]. It was directed that his reign should be reckoned from the deposition of Farrukhsiyar [Muḥammad 'Alí Khán, *Tárikh-i-Muzaffarí* and Kháfi Khán II, 841]. Accordingly it is counted usually from the 9th Rabí' II, 1131 H. (28th Feb. 1719). But the contemporary authority, Kámwar Khán, gives the first of that month, namely the 1st Rabí' II, 1131 H. (20th Feb. 1719), as the exact reckoning.

I may note that the dates of the Christian era, given in this paper, are all calculated according to the Gregorian or New Style. I have used the "Practical Tables...." of Johannes von Gumpach, London, James Madden, 1856.

Although not strictly within the scope of this paper, I append some remarks on Moghul mint-towns, as likely to be of use to any one interested in my more immediate subject, and I am not likely to find any other early opportunity of placing the results on record. These notes are in continuation of those printed in the Society's *Proceedings* for January 1893.

'ALAMGÍRPUR. Places with this name seem very hard to find; I therefore note those I know of. But in the absence of special reasons for doing so, it would be hazardous to suggest that either is the mint-town for coin No. 772 of the British Museum Catalogue. I find by an

entry in Kámwar Khán's *Tárikh-i-Salátn-i-Chaghtaiyah*, that on the 22nd Ramzán, 1122 H. (13th Nov. 1710), Bahádur Sháh was encamped at Azímábád Taláori, "alias *Alamgírpur*," being the halting place between Karnál and Thánesar. Also, if I recollect rightly, there is a village *Alamgírpur* close to the east or left bank of the Jamuná, in the Saháranpur district. *Alamgír* was in that part of the country, on at least one occasion, on a hunting expedition to Bádsháhi Mahal and parganaí Faizábád (Saháranpur District).

MU'AZZAMÁBÁD. I have little or no doubt that this mint town should be identified with Gorakhpur, Śúbah Audh. When I was serving in that district I recollect seeing the name Mu'azzamábád, Gorakhpur, used in the *Mawázinah* and *Kanúngói* papers of the end of the last century, which twenty years ago were still in existence. Only a few days ago, I was reading the autobiography of some un-named dependant on Fazl 'Alí Khán, once *Amíl* of Gházipur. For a few years Fazl 'Alí Khán, was *Faujdar* of Gorakhpur (F. Carwen's translation of *Khair-ud-din* Muḥammad, Allahábádí's, *Tuḥfat-i-Tázah*, p. 19). When speaking of this appointment, this anonymous writer calls the place "the *Sirkár* of Sarwár, otherwise Mu'azzamábád-Gorakhpur."

NAŠRATÁBÁD. In the *Ma'áṣir-i 'Alamgírí* (p. 304, year 1098 H.) *Alamgír*, after taking Ḥaidarábád, advanced against Sakkar, a place between Bijápur and Ḥaidarábád. It was then ruled by Nand (or Parya, or Paid) Náik, a man of the low Dherh caste. After it had been taken, the country (*úlkah*) of Sakkar was by the Emperor's orders re-named Našratábád [*ibidem*, p. 307]. For other notices of it, under its new name, see pp. 344, 345, 360, 364, 384, 410, 416, and 513 of the same volume. It is also mentioned as Našratábád-Sagar in the *Ma'áṣir-ul-Umrá*, II, 291. Thornton, *Gazetteer*, 936, states that "Suggur" is a town in the Nizam's territory, Lat. 16° 36', Long. 76° 51', 124 miles S.W. by W. from Ḥaidarábád. On the map of India in Johnston's Royal Atlas it appears as Sagar.

SHÁHÁBÁD KANAUJ. In the British Museum Catalogue, p. 212, there is a coin No. 1019, which the author assigns (p. lviii) to Sháhábád in Audh, disregarding the second word, which he reads *Fatúh*. I think there can be little doubt that this word should be read *Kanauj*, قنوج. The name is usually spelt by Muhammadans with ق, see, for instance, Kháfi Khán, Text I, pp. 63, 73, 109; also throughout the *Aín-i-Akbarí*, Blochmann's translation, I, 32, etc. (entered in his Index under Q). I was four years in the Farrukhábád district (in which Kanauj is included), and my recollection is that the old official name of the place was Sháhábád Kanauj. It is so styled in Dowson's Elliot, VIII. 46. I thus propose Kanauj, Śúbah Akbarábád, instead of Sháhábád, Sirkár Khairábád, Śúbah Audh.

ZAFARÁBAD. Since I wrote my former remarks I have found a direct mention of the occasion when Bidar was re-named Zafarábád. It is also frequently called Muḥammálád Bidar. The passage I refer to is in *Kháfi Khán*, II. p. 3. He tells us that in 1066 H., the thirtieth year of Sháhjahán, Prince Aurangzib was appointed to make a campaign against Bijápur, just after he had "by notable exertions, acquired the fort of "Bidar and the Şúbah of Aḥmadálád, and the fort of Kalijání, and "had re-named them the Şúbah of Zafarábád."

Note on the preceding Paper.—BY DR. A. F. RUDOLF HOERNLE.

I fully agree with Mr. Irvine that Aurangzib's reign should be dated from 1068–1118 A. H. or 1658–1707 A. D. I had never made any special enquiries on the exact official date of his accession, and the initial date 1869, given in my coin-reports in the *Proceedings* was simply quoted as that usually assigned. That it is wrong,—if the reign is to be counted from the *officially* fixed date, and not from the date of the *actual* accession,—Mr. Irvine has amply established; and I agree with him, that it is more reasonable to accept the official date as fixed by an emperor himself.

I should, however, put "the two all-important things for us" rather in this form:—1. To know what date was officially fixed by an emperor; 2, to ascertain whether the date, officially fixed, was actually adhered to in dating coins and documents of his reign.

Now with regard to Aurangzib, nearly all his coins do adhere to the officially fixed date. There are, however, a few exceptions:—

1. There is the coin, No. 845 of the British Museum, dated in 1119 Hijrah, and 51 regnal. It is the only one with this peculiar date that I remember to have come across. As Aurangzib died on the 2nd March 1707, and the Hijrah year 1119 only commenced on the 3rd or 4th April 1707 (or the 1st Muḥarram 1119), it is clear that either the date 1119 is wrong, or that the coin is posthumous. That the latter may be the true explanation, appears from the following facts:—Aurangzib's successor was Bahádur Sháh. He heard of his father's death only three weeks afterwards, on the 22nd March 1707, and his *actual* enthronement took place only on the 26th April 1707, that is, on the 24th Muḥarram 1119. It was not till the 25th December 1707, that the official date of his accession was fixed to be the 22nd March 1707. It is, therefore, quite possible that coins struck in the time intermediate between the 2nd March 1707, the date of Aurangzib's death, and the 26th April 1707, the date of Bahádur Sháh's *actual* accession, were still issued in Aurangzib's name. It would thus occur that a coin,

struck between the 1st and 24th Muḥarram of 1119 Hīrah, would be issued as one of Aurangzīb's, dated in his 51st year and in 1119 Hīrah. This practice would cease as soon as the actual enthronement had taken place, and notice of the fact had been proclaimed in all mint-towns.

It would be interesting to know what the actual practice was with regard to coining during a period of temporary vacancy, whether actual or official, of the throne. When an emperor died, did the coining in his name cease in a mint-town, as soon as the news of his death reached that town; or was coining in his name continued, till news arrived of the *actual* accession of his successor; or was it continued till information was received of the *officially* fixed date of accession? Thus to take Aurangzīb's case as an example, did coining in his name cease from the 2nd March 1707 (the date of his death) in Aḥmadnagar (the place of his death), and similarly in other mint-towns as soon as the news of his death was received? Or did it cease from the 26th April 1707, the date of Bahādur Shāh's actual enthronement, in Lāhor, and in other places as soon as information of the enthronement was received?

2. There is no real difficulty in the case of coins like the preceding. It is different with such coins of Aurangzīb as are dated in his first regnal year, and in 1070 Hīrah. No. 728 in the British Museum is such a coin of the Patna mint. It is figured on Plate XIX of the B. M. Catalogue. The regnal year is expressed verbally *aḥad*. In my own collection, I have two such coins, of the mints Multān and Zafarābād respectively. The latter is from a treasure trove found in Champaran in 1892.

Now, reckoning by the *official* date, Aurangzīb's first year runs from the 1st Ramazān 1068 to the last Sha'bān 1069, and the second year, from the 1st Ramazān 1069 to the last Sha'bān 1070. Accordingly the coins of his first year might be dated in 1068 or 1069, those of his second year, in 1069 or 1070. But no coin could be dated both in his first year and in 1070. That dating is only admissible, if the accession of Aurangzīb is placed at some point of time in 1069.

These coins require some explanation. They certainly do not agree with the official reckoning. They are undoubtedly exceptional specimens, but they are not exceptionally rare, nor are they a vagary of some obscure or outlying mint-town. They were issued from places so well-known and so far apart, as Patnā and Multān. It does seem that in the case of these coins, at least, the accession of Aurangzīb was dated from the 24th Ramazān 1069 (15th June 1659), the day on which the second enthronement took place with full ceremonials. But if so, how is the non-observance of the officially fixed date to be explained?

Is it possible, that there was an interval between the receipt of the news of the second enthronement and the receipt of the information of the officially fixed date, and that those exceptional coins were struck during that interval? The interval could not have been of long duration, and this explains the paucity of those peculiar coins. One can easily imagine that the news of the ceremonies of the second enthronement travelled faster, than the communication of the matters officially settled at that time. Still the interval must have been, at least, three months; for the Hġrah year 1070 commenced on the 18th September 1659; and no coin, with the dates 1070 and *aḥad*, could have been struck before the first month, or Muḥarram, of 1070 Hġrah (18th September to 17th October 1659). On the theory, here suggested, it is quite possible that also some of the extant coins, dated 1069 Hġrah and *aḥad* (or 1st year) regnal, were struck by the same wrong reckoning, that is, after the termination of the *officially* fixed first year. This would be the case with all those coins which were struck after the second enthronement and during the three last months of the Hġrah year 1069. When once the accession was *officially* antedated on the 1st Ramaẓān 1068, the three months after the Ramaẓān of 1069 (and in fact, that Ramaẓān itself) fell outside the first year of the reign. As the months of coining are not mentioned on Aurangzib's coins (as they are on some classes of coins of his predecessors), it is now impossible to determine, whether any of the coins, with 1069 *aḥad*, are really wrongly dated, if regard is had to the *official* reckoning.

For easy reference I here re-print, from the B. M. Catalogue (p. 392), the portion of the comparative table of the years A. H. and A. D. which is in question. The month, day, and day of the week of the Christian year are placed under each Muhammadan month, and correspond to the first of that month. The week-days are lettered from A (for Sunday) to G (Saturday). The months are indicated by Roman numerals. Thus the first entry 9 X C shows that the month of Muḥarram 1068 began on Tuesday the 9th October 1657.

A. H.	A. D.	Muḥarram.	Safar.	Rabī' I	Rabī' II.	Jumādī I.	Jumādī II.
1068	1657	9 X C	8 XI E	7 XII F	58, 6 I A	4 II B	6 III D
1069	1658	29 IX A	29 X C	27 XI D	27 XII F	59, 25 I G	24 II B
1070	1659	18 IX E	18 X G	16 XI A	16 XII C	60, 14 I D	13 II F

A. H.	A. D.	Rajab.	Sha'bān.	Ramaẓān.	Shawwāl.	Zú-l-Qa'dah.	Zú-l-Hġrah.
1068	1657	4 IV E	4 V G	2 VI A	2 VII C	31 VII D	30 VIII F
1069	1658	25 III C	24 IV E	23 V F	22 VI A	21 VII B	20 VIII D
1070	1659	13 III G	12 IV B	11 V C	10 VI A	9 VII F	8 VIII A

The Koch Kings of Kámarúpa.—By E. A. GAIT, Esq., I. C. S.

INTRODUCTION.

Perhaps the most interesting epoch in Assam history is that in which the Koch dynasty rose to power, and after defeating the petty chiefs amongst whom the country had been split up after the fall of the Pála rulers, succeeded in consolidating their rule throughout the ancient Kámarúpa, and in reviving for a time the pristine glories of that once famous kingdom.

Several accounts of the Koch dynasty are already available,* but by far the most detailed narrative of the early founders of this kingdom with which I am acquainted, is that contained in a manuscript history [*Vamśávali* or *Purushanāma* (Sanskrit)] in the possession of Rāja Lakshmi Nárāyaṇa Knar, the leading representative of the Darang branch of the Koch family.

This history is supposed to have been written, about 1806 A. D., by Sūrya Hari Gaṇaka, under the orders of Rāja Samudra Nárāyaṇa.† It is inscribed on oblong strips of *Sachi* bark, and each page is illustrated. The story ends suddenly with the death of Parikshit, and as there is nothing to show that the work was considered finished, it is conjectured that the author died before he had completed it.

As no account of this *Vamśávali* has hitherto appeared in print, I propose to furnish an abstract of it now, and to take the opportunity to give a sketch of what is known of the country before the Koch kings rose to power, and to examine one or two questions connected with this dynasty regarding which existing accounts differ, in the light of the information afforded by this history and also of inscriptions on temples and other sources.‡

* Cf. *Asāmburanjis* by Bisvośwar and Rái Guṇábhírám Baṛua, Robinson's Descriptive Account of Assam, Dr. Hunter's Statistical accounts of Koch Bihār and Raṅpur, and the accounts by Buchanan Hamilton, Babu Rám Chandra Ghosh and other authorities cited in Dr. Hunter's works.

† Sūrya Hari Gaṇaka is reputed to have been the greatest Sanskrit scholar of his time in Assam. He was the author of numerous Sanskrit and Assamese works, and his descendant, Manbhál Maṇḍal, holds a deed of gift dated 1720 Śak (1804 A. D.) by which the Ahom King made a grant of land to Sūrya Hari in recognition of his learning and piety.

‡ Including the *Vamśávali* of Rájá Prasiddha Nárāyaṇa Knar, a manuscript copy of the *Yoginī Tantra* in the possession of a Bráhmaṇ of Haulí Mohanpur, in which the prophecies of the gods have from time to time been brought up to date, and lastly a few inscription in temples, and the references made to the Koch

* The early history of Kāmarūpa is wrapped in mystery, and our knowledge of it is drawn from dubious and fragmentary references in the *Mahābhārata*, and in the *Purāṇas* and *Tantras*, chief amongst which may be mentioned the *Yoginī Tantra* and the *Bhāgavata* and *Kālikā Purāṇas*.

The boundaries of the country varied greatly from time to time.

Extent of Kamarupa.

In the *Yoginī Tantra* it is said that Kāmarūpa comprised the country between the Karatoyā and the Dikrai, so that it included not only the whole of what is now known as the Brahmaputra Valley, but also Rangpur and the State of Koch Bihār. It was subdivided into four portions, *viz*: Kāmapīṭha from the Karatoyā to the Sankosh, Ratnapīṭha from the Sankosh to the Rupahi, Suvarṇapīṭhā from the Rupahi to the Bhamli, and Saumarpīṭha from the Bhamli to the Dikkara-bāsini or Dikrai. It is described as bounded on the North by Kuñjagiri, on the West by the Karatoyā, on the East by the Ginkaṇjaka, and on the South by the junction of the Brahmaputra and Lakshma rivers. It is added that Kāmarūpa is three cornered and is 100 yojanas in breadth and 300 yojanas in length.* According to the *Kālikā Purāṇa*, Kāmakhyā and Prāgjyotishapura were situated in the centre of Kāmarūpa, and the *Vishṇu Purāṇa* adds that the country extended around it for 100 yojanas in all directions.† In the *Mahābhārata*, Bhagadatta's Empire of Prāgjyotisha or Kāmarūpa is spoken of as extending to the seacoast,‡ and the copper plate of Vanamāla, which will be referred to further on, says that the rule of that monarch also extended to the sea §

Hsuen Tsiang places the circumference of the country when he visited it, at 10,000 li, from which General Cunningham infers that it must, at that time, have comprised the whole of the Brahmaputra Valley as well as Koch Bihār and Bhotān.||

The name of the country is mythologically explained as follows:—

When Sati died of grief at the reproaches of her husband Śiva, the latter, overcome by remorse, wandered about the world carrying her dead body on his head

Origin of name "Kamarupa."

In order to put a stop to his penance Vishṇu followed him and lopped

Kings by Muṣalman historians, which have been made accessible by Blochmann in the J. A. S. B. for 1872.

* Edition published in Calcutta at the Bangobashi press in 1294 Sal, pp. 76, 77

† *Kālikā Purāṇa*, page 91, of Edition published at the Bangobashi press; and *Vishṇu Purāṇa*, page 81 of Edition published at the same press.

‡ *Sabhā Parva*, XXVI, XXVII. The references found elsewhere to the different parts of the *Mahābhārata* are to the translation of Pratāp Chandra Roy.

§ J. A. S. B. IX, (Part II) 773.

|| *Ancient geography of India*, Volume I, Buddhist period, p 500

away the body piece-meal with his discus. The body fell to earth in 51 different pieces, and wherever each piece fell, the ground was held to be sacred. Her organs of generation fell on Nilāchala hill near Gauhāṭī, and the deity of that place was thenceforth known as Kāmākhyā, the goddess of sexual desire. As Śiva still continued to do penance, the other gods became afraid that he would thereby acquire universal power, and accordingly despatched Kāmadeva, the Indian Cupid, to make him fall in love again, and thereby break his penance. Kāmadeva succeeded in his Mission, but so enraged was Śiva at the result, that he burnt him to ashes by a fiery glance from the eye in the centre of his forehead. Kāmadeva eventually recovered his original form, and the place in which this took place was ever afterwards known as Kāmarūpa.

The earliest recorded king of Kāmarūpa, of whom however, very little is known, was named Mahīraṅga Dānava.* He was succeeded by his son Hāṭaka Asura, after whom came Sambara Asura and then Ratna Asura.†

After this, there was a chief named Ghaṭaka, the ruler of the Kirātas, who are said to have been a powerful race, much addicted to eating flesh and drinking strong drinks.

Ghaṭaka was defeated and slain by Naraka, who was born of the earth by Viṣṇu, and had been deputed by him to exterminate the Kirātas. Having succeeded in doing this,‡ he made Prāgjyotiṣhapura (the modern Gauhāṭī) his capital,§ and settled numerous Brāhmins at Kāmākhyā. His rule extended from the Karatoyā on the West, to the Dikrāṅg on the East. It is said that he married Māyā, the

* Notices of Mahīraṅga and his successors will be found in the *Kālikā Purāṇa* Chaps. 36–42, and on page 81 of the *Yoginī Tantra*. In the *Raghuvamśa*, it is related that Rāghu crossed the Brahmaputra with a view to attacking the king of Prāgjyotiṣha or Kāmarūpa. The latter is said to have submitted without venturing to give battle, and to have paid a tribute of war elephants. The name of the king is not mentioned.

† The names Dānava and Asura, indicate that these kings were of aboriginal origin. According to the *Vamśāvalī* of Prasiddha Nārāyaṇ Kuār, Sambar, who is mentioned in the text as the grandson of Mahīraṅga, was the founder of the dynasty. He is there spoken of as the son of Brahmā, and is said to have had his capital at Raṅgamāṭī.

‡ Apparently he only subdued them. In the *Udyoga Parvan*, his son Bhagadatta is referred to as bringing Kirātas to the aid of Duryodhana. (XVIII, 15–16.)

§ There is a hill near Gauhāṭī which is still known as the hill of Naraka Asur.

daughter of the king of Vidarbha or Kuṇḍina. Naraka was greatly favoured by Vishṇu who placed him in charge of Kāmākhyā, and told him that so long as that goddess was pleased with him he would do well, but that if he angered her, he would suffer, and that he himself would then desert him. It is said that Naraka carried off 10,000 girls as wives, and that he became so proud that he asked Kāmākhyā to marry him. To this the goddess assented on condition that he erected a temple to her on Nilāchala and also constructed a tank and a road to the temple in a single night. Naraka accepted the terms and had almost accomplished his task, when the goddess caused a cock to crow before dawn, and saying that that was a proof that day had come, evaded her promise and refused to marry him. Overcome with rage, Naraka slew the cock, and the place where he did this is still known as Kukūṭa-Kāṭā (the place where the cock was killed). But Naraka's crowning misfortune was his refusal to permit Vaśiṣṭha Muni to go to worship at Kāmākhyā, in consequence of which the Muni cursed Naraka and Kāmākhyā, saying that thence forward no one who worshipped at Kāmākhyā's shrine should see the fulfilment of his desire. By the aid of Śiva, the duration of this curse was limited to three hundred years, but Naraka had now completely alienated both Kāmākhyā and Vishṇu and was eventually slain by the latter in the incarnation of Kṛishṇa. Kṛishṇa's invasion of Prāgjyotiṣhapura is described in the *Bhāgavata* and *Vishṇu Purāṇas*, in the latter of which it is stated that his attack on Naraka was instigated by Indra.* The capital was defended by sharp *pūñjīs* and by numerous outworks erected by the Asura Mura, but Kṛishṇa cut his way through with his discus and slew Mura and his sons. He then entered the city and engaged in a terrible combat with Naraka, and after killing thousands of daityas, he clove Naraka in twain with his discus. He recovered the golden earrings of Aditi and other property seized by him, and sent the 10,000 girls imprisoned in his harem together with his 6,000 elephants and his horses to Dvāraka.

Naraka left two sons, Bhagadatta and Vajradatta, of whom the former was appointed by Kṛishṇa to succeed him as king of Prāgjyotiṣha. Bhagadatta is frequently referred to in the *Mahābhārata*. In the *Sabhā Parvan*, it is related that he was defeated by Arjuna after a battle which lasted for eight days.† Later on, when the forces of the Kauravas and Pāṇḍavas were being mustered for the last struggle,

* *Bhāgavata Purāṇa* (Edition published at the Bangobashi press) X, 59, and *Vishṇu Purāṇa*, pp. 81—83 (V, 29)

† *Sabhā Parvan*, secs. XXVI and XXVII. His troops are described as a host of Kirātas and Chīnas, and numerous other warriors that dwelt on the seacoast.

Bhagadatta went to the assistance of Duryodhana with an *Akshauhini* of troops consisting of Chīnas and Kīrātas.* At the final battle of Kurukshetra, he performed prodigies of valour, and no less than four sections of the *Droṇa Parvan* are devoted to a narrative of his heroic deeds, from the time when he rescued Duryodhana from the onslaughts of Bhīma to his fight with Arjuna, in which he was at last defeated and slain. The issue of this last combat is ascribed to the magic intervention of Kṛishṇa, who rendered harmless the invincible weapon which he had previously given to Bhagadatta's father Naraka.†

Bhagadatta was succeeded by others of his line, one of whom, **Bhagadatta's successors.** Pralambha, is described as having been an unusually powerful prince. By his wife Jivadá, he had a son named Hajara, and the latter, by his wife Tárá, who was an incarnation of Lakshmi, had in his turn a son named Vanamála. A copper plate containing a grant of land by the latter to a Bráhmaṇ which was found near Tezpur in 1840 A. D., is the authority for the account of Bhagadatta's successors here given.‡

It has been assumed that Vanamála was of the Pála dynasty, but his assorted descent from Naraka makes this impossible; this assumed ancestry, and the fact that he bore the Kshattriya title Varman or Barman, renders it much more likely that he was a converted aboriginal potentate of the same class as the Khyen and Koch kings.

The so-called Rájás of Rání, in Kámrúp, claim to be descended from the lineage of Bhagadatta.

Kṛishṇa frequently appears in Assam Mythology. We have already seen how he slew Naraka and set up his son Bhagadatta in his stead. He is also said to have carried off his bride Rukmiṇi from her father Bhishmaka, the king of Kuṇḍilya§ or the country around Sadiyá, between the Dikráng and Dibong rivers. The name of this monarch is still preserved in upper Assam, and a ruined fort, some sixteen miles north of Sadiyá, is attributed to his reign.|| The name of the kingdom survives in the Kuṇḍil river.

* Udyoga Parvan, sec. XVIII.

† Droṇa Parvan, secs. XXVI—XXX.

‡ J. A. S. B. IX. p. 766. The plate bears a date in an unknown era—"Samvat 19". Presumably this refers to the date of the king's succession.

§ According to ordinary Pauráṇik accounts, Bhishmaka was king of Kuṇḍina or Vidarbha, the modern Berar, in Central India.—Ed.

|| These ruins were described by Colonel Hannay in the J. A. S. B. for 1848, p. 459. It is not unlikely that further research amongst this and other ruins in the same direction, would add considerably to our knowledge of ancient Assam history.

Krishna's grandson, Aniruddha, carried off Ushá, the daughter of Bápa Rájá, king of Sopitapura, the city of

And of Usha.

blood, now known by the Assamese equivalent, Tezpur—in consequence of which he was caught by that monarch and imprisoned. The subsequent invasion of Bápa Rájá's kingdom by Krishna and the rescue of Aniruddha is described in the *Bhágavatá Puráṇa* and elsewhere. From the *Káliká Puráṇa* it appears that Rájá Bápa was the contemporary and friend of Naraka.*

From these stories, all that we can gather with certainty is that the Brahmaputra Valley was known to the Aryan invaders of India at a very early period, and that the process of converting the aboriginal tribes to Hinduism, which is going on before our eyes to-day, commenced long before the time of which we have any authentic record.

Kámarúpa appears to have been a famous place for pilgrimages and devotions, and the fame of Kámakhya and the Brahmakunda had spread abroad at a very early date. In the *Tantras* it is said "Elsewhere doities are scarce, but in Kámarúpa, they are found in every house."

At the beginning of the Sakáditya era, a king named Devesvara ruled somewhere in Kámarúpa but the site of his capital is unknown. He was a Súdra by caste, and is said to have tried to prevent the spread of Buddhism and to propagate the worship of Kámakhya, but without any very great success.

Devesvara.

In the *Yoginí Tantra*, mention is made of Nágasankara or Nágakhya, who is said to have been born of the Nagasankara. Karatoyá river, about 378 A. D., and to have founded a dynasty which ruled for four hundred years. His capital was above the Nágasankara temple at Pratápgarh, in Vishnunátha (Bishuáth).

Our earliest authentic knowledge of the country is derived from the writings of Huen Tsiang, the celebrated Chinese traveller and pilgrim. He visited Kámarúpa about 640 A. D., at which time a Hindú prince named

Huen Tsiang's account of Kámarúpa.

* Vishnu Purána, Book V, Chaps. 32, 33, and Káliká Purána, p. 94. The events described here form the subject of one of the earliest known epics in the Assamese language. It is known as *Kumara-haraya*, and is said to have been written by Sri Chandra Bháratí.

It should be noted that Tezpur is not the only place which claims to be the site of Rájá Bápa's capital. The remains of what is said to be the city of this king, are still pointed out at a place a few miles south of Dinájpur, which to this day is known as *Bán Rájár garh*. (*Añandarám Bore's Sanskrit Dictionary*, p. 113.)

Kumára Bháskara Varman* was on the throne. He describes this ruler as a Bráhmaṇ, but by this it seems doubtful whether he meant anything more than that he was a Hindú and not a Buddhist. Barman is a well known Kshattriya title, and is one which is commonly adopted today by Kacháris, when they accept Hinduism and assume the sacred thread, on the fiction that they are concealed Kshattriyas. The method of conversion by fictions such as this is, doubtless, of very ancient date, and from the fact that this prince described himself as "Barman," it seems not unreasonable to presume that he was a Hindú convert from some aboriginal tribe. The presumption is strengthened by the fact that his subjects are described as being of small stature with dark yellow complexions, and by our knowledge that subsequent rulers, *e.g.*, the Khyen and Koch kings, were nothing more than Hinduised aborigines.

Hsien Tsiang reports that the people adored and offered sacrifices to the Devas, and adds that although Buddhism was not forbidden, its votaries were scarce.

The soil is described as being deep and fertile, and the towns were surrounded by moats filled with water brought from rivers or banked up lakes.† The people were fierce in appearance, but upright and studious; their language differed somewhat from that spoken in Mid-India. In his time, as now, the country was famous for wild elephants, which were especially numerous in the south-east.‡

After Hsien Tsiang's account, we are again left with no authentic information regarding the country. It is said that Subáhu was born in the 19th generation beginning from Naraka, in the lineage of Bhagadatta. Subáhu became an ascetic and went to the Himálayas, and was succeeded by his son Suparúá who was killed by his ministers.

Then a Kshattriya Sannyási named Jitári, came from the west and founded a kingdom. He deserted Gauháti and built a capital further west. His contemporary Jalpeśvara had his capital where the Śákta temple of Jalpeśvara (which he founded) now stands, in the Jalpaiguri District. Jitári was succeeded in turn by Subalí, Padma Náráyaṇa, Chandra Náráyaṇa,

Jitári.

* *Si-yu-ki*. Beal's trans. II. p. 196.

† The Ahom capitals were in the same way encircled by moats, and the old Kachári capital at Dimápur was similarly protected on two sides, while the Dhan-siri flowed along the third side.

‡ These animals appear always to have been plentiful, for we read in the Raghuvamśa that the king of Kámarúpa or Prágyotisha gave many elephants as tribute to Raghu (IV—83), and in the Vishṇu Purāṇa (p. 81) it is stated that Kṛishṇa took 6,000 elephants from Naraka's capital, after he had defeated and slain that monarch.

Mahendra Náráyana, Gajendra Náráyana, Prápa Náráyana, Jaya Náráyana, Kshobha Náráyana, and Ráma Chandra.*

The next king to be mentioned is Arimatta, who ruled the country on the south bank of the Brahmaputra from the neighbourhood of Gauháti, as far as Rahá in Nowgong. He is said to have been born of a princess of the house of Ráma Chandra,† who was raped by the Brahmaputra river. According to the *Vamśávali* of Prasiddha Náráyana, Arimatta ruled at Baidargarh until 1160 Sak. (A. D. 1238.)‡

His son Jaṅgál Báláhu was a mighty warrior, and was engaged in constant feuds with the Kachári and Jaintiá Rájás. The ruins of a fort said to have been built by him are still visible in Sahari Mauza, near Nowgong. He eventually made peace with the Kachári Rájá, and married his daughter, but hostilities again broke out and he was defeated. He fled covered with wounds, and was drowned in the Kallang river.

Four kings, named Mimaṅg, Gajaṅg, Sribaṅg and Mrigaṅg are mentioned by Guṇábhírám as having reigned for 200 years at Lohityapur in Kámarúpa, and as having been succeeded by Pheṅguá Rájá. In Prasiddha Náráyana's *Vamśávali*, on the other hand, it is said that Naraṅg and Mrigaṅg were son and grandson of Arimatta, and that the latter being very pious made over his kingdom to Jaya Síṃha, a learned Bráhmaṇ of Darnaṅg. But these accounts are so vague and uncertain that it seems to be useless to try to reconcile them or to construct a connected history from them.

The Pála rulers still remain to be mentioned. There is no doubt that kings of this name at one time possessed great power in the country, but our information regarding them is very meagre. Rai 'Guṇábhírám Barná in his

* So Guṇábhírám and an old chronicle in the possession of a Bráhmaṇ, to which reference was made by General Jenkins in the J. A. S. B., 1X., p. 766. Prasiddha Náráyana's *Vamśávali* says that Ráma Chandra was 14th in descent from Jitéri. Hannay (J. A. S. B. 1848, p. 464) identified Jitéri with Dharma Pála, and says that his kingdom was in Central Assam and that the dynasty became extinct with Rája Súkránka in 1478 A. D. He quotes no authority for these statements.

† So the *Vamśávali* of Prasiddha Náráyana. Guṇábhírám says that the princess was of the Nágákhyia line.

‡ The so-called Dimurá Rájá in Kámrúp claims to be descended from Arimatta, and will not touch the Ari fish in consequence. Baidargarh is near Betnú in Kámrúp. Guṇábhírám says that local tradition ascribes its erection to Pheṅguá Rájá. Traditions regarding Arimatta and his son are still current amongst the people, and their history is said to be narrated in an old *puthí* (now very rare) which I have not yet succeeded in obtaining.

Buranji gives a list of 17 Pála princes who reigned in Kāmarūpa, viz: Jayanta Pála, Chakra Pála, Bhúmi Pála, Prema Pála, Paksha Pála, Daksha Pála, Chandra Pála, Nárāyaṇa Pála, Madhu Pála, Indra Pála, Simha Pála, Kṛishṇa Pála, Su Pála, Gandha Pála, Mádhava Pála, Syáma Pála, and Lakshmi Pála. He adds that these princes were Buddhists, and that Lakshmi Pála was followed by a king of the name of Subáhu who died childless and was succeeded by his Mantri Sumati.*

There is a tradition amongst a colony of Bráhmans (called Basat-tariá, i. e. 72) resident at Suálkuchi in Kāmarūpa, that they settled there in the reign of one Dharma Pála, and a copperplate in their possession records a grant of land made to them by that prince.

Another plate found recently at Benares and deciphered by Professor Venis, records the grant of two villages Badá and Munda^r in the *Vishaya* of Badá in the *Bhukti* of Prárajyotisha in the *Mandala* of Kāmarūpa to a Bráhmaṇ named Śrīdhara. The date of the grant has not been deciphered, but Professor Venis is of opinion that it was about 1142 A. D. The name of the prince making the grant is Kumára Pála, son of Ráma Pála and grandson of Vighraha Pála. The inscription says that Ráma Pála killed a certain Rájá Bhīma. Kumára Pála is styled Lord of Gauḍa, and his General is said to have slain a rebellious vassal named Tirṅgya, or Tishya Deva in the East.† From the mention of Rama Pála and Vighraha Pála and the title Gauḍeśvara assumed by Kumára Pála, this plate would seem to prove that the Rájá in question belonged to the Pála dynasty of Bengal, and the probability that this was so is strengthened by the fact that Deva Pála of that dynasty (who according to General Cunningham ruled from 850 to 885 A. D.) is said to have conquered Kāmarūpa.‡

* In an ancient-looking chronicle shown by a Bráhmaṇ to General Jenkins, Lakhi Pála, Subáhu and Sumati are mentioned first, then Jitári and his descendants, then the Pálas, and lastly Mimaṅg and his successors. It is almost impossible to give reasons for arranging these dynasties in one order rather than in another, particularly as it seems probable that they ruled in different parts of the country. It is supposed for instance that Mimaṅg, and his family reigned at Lohityapura in Kāmarūpa, and that the capital of Jitári was outside modern Assam in the Jalpaiguri District.

The list of Pálas in this document differs slightly from that quoted in the text, and is given by General Jenkins as follows:—

Japandu Pála, Huri Pála, Dhamba Pála, Ráma Pála, Pakshya Pála, Chandra Pála, Nárāyaṇa Pála, Mantri Pála, Haina Pála, Syáma Pála, Mactya Pála, Su Pála, Gandha Pála, Mádhava Pála, and Lakhiá Pála. The differences are however in many cases clearly due to misreadings of the original.

† Supplement to Pandit for February, 1893.

‡ Vide copperplate found at Bhágalpur and translated by Rajendrakála Mitra, J. A. S. B. 1879 page 407. The conquest of Kāmarūpa is however uncer-

Mr. Westmacott in his "Traces of Buddhism in Dinájpur," was of opinion that the Bengal Pála dynasty at one time ruled the country north of the Padma, and Mr. Ferguson in his paper on Hien Tsiang says that "Pála kings were ruling east of the Karatoyá long after "Bengal had been subdued by the Senas, before whom indeed the Pálas "probably retreated by degrees to the north-east." The only conquest in Kámarúpa claimed by the Sena line, who succeeded the Pála dynasty in Bengal, is that of Vijaya Sena (1046-1066 A. D.) who is said in the inscription found at Rajshahye by Mr. Metcalfe, to have conquered the Kings of Gaṇḍa, Kámarúpa, and Kaliṅga.*

On the other hand it should be mentioned that the name Pála alone creates very little, if any, presumption regarding the lineage of the rulers bearing it. Many of the Bhuiyás were named Pála, and Dalton speaks of an Aryan dynasty of that name which ruled over Kuṇḍilya or the country around Sadiyá, and succumbed to a Chhutiá or Kachárá invasion, probably about the same time that the Koches rose to power lower down the Valley.

tain. According to Doctor Hultzsch the meaning of the verse is that Deva Pála supported the king of Kámarúpa against the king of Utkala (*Ind. Ant.* Vol XV, p. 308). Cf. Dr. Kielhorn's paper on the Dinájpur Inscription; *J. A. S. B.*, Vol. LXI, Part I, pp. 77 and ff. The line of Pála Kings is now established to be as follows:—

(1) Gopála I.

(2) Dharmapála.

Vákpála.

(3) Devapála.

Jayapála.

(4) Vighrahapála I.

(6) Náráyaṇapála.

(7) Rájayapála.

(8) Gopála II.

(9) Vighrahapála II.

(10) Mahipála.

(11) Nayapála.

(12) Vighrahapála III.

It is doubtful whether Deva Pála was nephew or son of Dharma Pála.

The dates of Deva Pála, as given above, are those given by General Cunningham, (*Rep. Arch. Sur. Ind.*, XI, 181). Dr. Rajendralála Mitra gives 895-915 A. D.

* *J. A. S. B.* 1878 page 401. It is however not very clear from his inscription whether the conqueror was the Sena prince or the ruler of Gaṇḍa.

In Glazier's Report on Raigpur, Dharma Pála is mentioned as the founder of a dynasty. It is said that he was succeeded by his son Bhava Chandra, whose successor, Pála, was the last of the line. The remains of a fortified city which even now retains the name of Dharma Pála, are still to be seen in Raigpur, and in the Baghdwár pargana of the same district are the ruins of Udayapura, the city of Udaya or Bhava Chandra.

Leaving the Pála dynasty we come upon somewhat more certain

The Khyen dynasty. ground. Tradition says that there was a certain Niladhvaja. **ground.** Tradition says that there was a certain Bráhmaṇ who had a most restless and troublesome cowherd. Going one day to chastise him, he found him asleep and a cobra shading him with its hood. He then noticed from the marks on his feet that he was destined to be a king. He informed him of the fact, released him from menial work and made him promise to make him his *mantrí* when he rose to power. In course of time, acting under the advice of the Brahman, the quondam cowherd deposed the last representative of the Pála race and ascended the throne, making the Bráhmaṇ his councillor. He assumed the name of Niladhvaja, and bringing many Bráhmaṇs from Mithilá did much towards re-establishing Vedic observances. He is said to have belonged to the Khyen tribe, but on conversion to Hinduism, he declared his caste to be that of High Súdra, just as the next dynasty—the Koch—called themselves Rájavamsís. He removed the capital to Kamaṭhapura,* on the western bank of the Dharlá in Koch Bihár. The ruins still exist, and are described by Dr. Buchanan-Hamilton who visited them in 1809.† He says that the city was very extensive, being no less than 19 miles in circumference, of which five were protected by the Dharlá and the rest by a rampart and a ditch. The city was built on the usual plan, enclosure within enclosure, wall within wall, the king's palace occupying the centre of the whole.

His son Chakradhvaja succeeded him, and the latter was in turn followed by his son Nilámbara, who attained to great power. His dominions included the

* He was on this account known as Kamaṭheśvara. It is doubtful how far Niladhvaja's empire extended, and it is not unlikely that in some portions of Eastern Kāmarūpa other rulers were at the same time exercising sovereign rights. The Musalmán historians of the time sometimes refer to Kāmarūpa and Kamaṭha as if the kingdoms were distinct, and sometimes speak as if the terms were synonymous and referred to one and the same country. "Comotay" is shown in the Map in Blaeu's *Theatrum Orbis Terrarum*, Vol II (Amsterdam 1650); but the map is too sketchy to enable the boundaries of the country to be ascertained from it.

† Buchanan-Hamilton's account is reproduced almost verbatim in Hunter's *Statistical Account of Koch Bihár*, p. 382. See also *Statistical Account of Raigpur*, p. 314.

greater part of Kāmarūpa, Goālpurā and Rangpur, and also part of Bengal. His attempts to extend his dominions were facilitated by the struggles which the Afghan Kings of Bengal were then making to maintain their independence of the Delhi Emperors.

Nilāmbara did much to improve communications, and amongst other works, constructed a magnificent road from Kamathapura to Ghoshghata, a portion of which still forms part of the main road between Koch Bihār, Rangpur and Bogra. The fall of this monarch was in this wise. The son of his councillor, a Brahman named Sauchi Pātra, was enamoured of the queen, and the king, hearing of it, ordered him to be killed and some of his flesh to be cooked. He then invited the father to a banquet and, after making him partake of his own flesh, told him what he had eaten and explained the circumstances under which the punishment had been inflicted. The councillor at once left the kingdom, under the pretence of making a pilgrimage to the Ganges in order to wash away the sin committed by his son. But his real object was revenge, and to obtain it, he went to Husain Shah, the Nawab at Gauda, and taking him of the weakness of the kingdom, persuaded him to send a large army to invade it. The siege of Kamathapura is said to have lasted for twelve years* at the end of which period Husain Shah gave out that he was going to abandon the siege and return to his own country, but that before doing so, his wife wished to pay a visit to Nilāmbara's Ram. Under this pretence some armed men were introduced into the city in litters, and with them the city was captured. Nilāmbara was taken prisoner and put in an iron cage to be taken to Gauda, but he made his escape, and Buchanan Hamilton says that in his time the common people of Kāmarūpa still looked for his restoration at some future date. The Assam chronicles fix 1498 A. D. as the date of the capture of Kamathapura, and this date is confirmed by a contemporary inscription found by Mr. W. S. Maccott, at Muldah bearing date 997 A. H. (A. D. 1591-2), which belonged to a Madrasah built by Husain Shah in commemoration of his conquest of Kamathā and Kāmarūpa†. The author of the Ruz refers to the conquest of these and other places, and mentions Rūpt Narayana Pathi, Kurinwar Gosa, Lakshmin and Lakhmin Narayana amongst the princes subdued. Husain Shah left his son Danyal with a strong army to complete the conquest, "but when the rains set in and the roads were closed" "the Rājā issued with his men from the hills and in a short time they were all killed." A very similar account is given in the Fathiyah

* This is doubtless an exaggeration.

† J. A. S. B. 1874, p. 281. A. D. 1498 is also accepted by Blochmann as the correct date (J. A. S. B. 1872, p. 79) #

i 'Ibriyah, from which it appears that the Rájá who drove out the Musalmáns was the Ahom king.*

A few years later (1506 A. D.) a Pathán named Turbuk is said to have advanced as far as Koliabar, where he

Turbuk's invasion.

defeated the Ahoms and was not finally expelled from the Province until 1532 A. D., when he was defeated and slain, and his army chased as far as the Karatoyá river. This invasion is recorded in the Ahom histories, but is not mentioned by Musalmán writers. The Mariís are said to be the descendants of prisoners taken in this war.†

Although Husain Sháh's invasion constituted the first serious attempt of the Muhammadan rulers of Bengal

Earlier Musalman invasions.

to permanently occupy Kāmarūpa, accounts are not wanting of earlier invasions which, however, seem to have partaken more of the nature of filibustering expeditions than of real attempts at conquest.‡

Ghiyásu'd-din Bahádur Sháh is reported to have invaded Assam about 1220 A. D. and to have ascended the Brahmaputra as far as Sadiyá, but in the end he was defeated and driven back to Gauḍa §

Ikhṭiyáru'd-din Yuzbak Tughril Khán invaded the country in 1256-57 A. D. For a time he was successful and he celebrated his conquest by erecting a mosque, but, when the rains set in, and the country was flooded, large numbers of his men died. The king of Kāmarūpa then returned from his hiding place in the hills and gave battle. Tughril was killed and his army defeated, and only a few escaped to Bengal to tell the tale.|| Muḥammad Sháh, son of Tughluq Sháh,

* Blochmann, J. A. S. B. 1872 pp. 79 and 336. The general account of the Khyen dynasty given above is taken from Guṇábhírám's *Āsám buranjī*.

† In the Fathiyah i 'Ibriyah it is said that they are the descendants of prince Dányál's army. As Turbuk's name is not mentioned in Musalmán histories, it is possible that the name is an Ahom designation of Dányál or some other commander of the forces left by Husain Sháh in Assam.

‡ I do not mention Bakhtiyar Khiljī's invasion, because it has been shown that he did not, as was once supposed, enter Assam and cross the Brahmaputra at Gau-háṭī, but that he marched northwards along the Karatoyá river which formed the boundary of the kingdom of Kāmarūpa.

§ Guṇábhírám's *Āsám buranjī* p. 81.

|| Guṇábhírám's *Āsám buranjī* p. 82 and *Tabaqát i Násirí* 263. The practise of flooding the country here referred to was common in early warfare in this part of India. Husain Shah's second invasion of Tippera was frustrated by a similar operation (Long's Analysis of the Rájámála, J. A. S. B. 1850 p. 543). Cunningham (Arch: Surv: of India Vol XV p. 170) mentions a tradition that Muḥṣṣu'd-din was killed near Sonárgáoṇ, but it is not quite certain that the same person is referred to, and in any case the version given in the text seems to be more authentic.

invaded the country in 1337 A. D. He sent "100,000 horsemen well equipped to Assam; but the whole army perished in that land of witchcraft, and no trace of it was left. He sent a second army to avenge the former disaster, but when they came to Bengal, they would go no further, and the plan had to be given up."*

In the reign of Barbak, some time about 1460 A. D., Ismā'il Ghāzi, the celebrated Pir, is said to have defeated Kāmeśvara, king of Kāmarūpa. The story is told at length in a manuscript found by the late Mr. Damant in the possession of a fakir in charge of Ismā'il Ghāzi's tomb at Kuntā Duār, Raṅgpur, but no reference is made to the subject in any Assam Chronicle or tradition.†

The records of these earlier Muhammadan invasions are very scanty, and very few traces of them now remain, beyond a few ruined fortifications (such perhaps as the Baidargāh already referred to), a few occasional finds of coins and the names of places indicating a previous Musalmān occupation.‡

Before proceeding further, it is necessary to give some account of

Baro Bhuiyas.

the Baro Bhuiyās. It is generally admitted that they were foreigners, but accounts differ as to the circumstances under which they came to Bengal & Assam. Buchanan's version is that twelve "persons of very high distinction, and mostly named Pāla, came from the west and settled" at Mahāsthān. He was of opinion that they belonged to the Bhungiyā tribe. Cunningham on the other hand thinks that they were Brāhmanas and that the name Bhuiyā is a corruption of Bhumi-hāra, a term applied to them as indication of the fact that they had taken to cultivation as a means of livelihood. He says that they still call themselves Bābhan, and claim to be Brāhmanas, but that their enemies say that they are the descendants of men of low caste whom Jarāsaṇḍha raised to the priesthood. He mentions that they form a large part of the population of Magadha, the chief representative of the clan being the Rājā of Tekāri, and from this he surmises that the Pāla Rajas "must have been of this caste, as they would appear to have been descendants of some of the Baro Bhuihār Pālas, while in their inscriptions they are silent as to their ancestry."

* Alamgir-nāmah, p. 731.

† J. A. S. B. 1874, p. 216.

‡ 30 silver coins were recently discovered near Gauhāṭī by a cooly working on the Assam-Bengal Railway. They bore dates from 1310 to 1399 A. D. Most of them were coins issued by the independent Sultāns of Bengal. Mahmūd Shāh II, Ghiyāsu'd-dīn Bahādur Shāh, Ilyas Shāh, &c. A previous find of 33 coins at Gauhāṭī in 1880 formed the subject of an article by Dr. Hoernle in the J. A. S. B. of 1881, p. 53.

Buchanan's identification of the Bāro Bhuiyās with the aboriginal tribe called Bhungiyā or Bhuiyā was endorsed by Dalton and other writers, but Dr. Wise has made it clear that the word "Bhuiyā" has nothing to do with caste but is simply a word formerly used to denote a chief or ruler.* He shows that one at least of the "Bhuiyās" was a Musalman, and quotes Janie as follows:—"Non se tamen dixere reges sed *Boiones*, quasi forsā Principes." Bhuiyā therefore simply means chief, and connotes nothing regarding the caste of the persons to whom it is applied.

Why these Bhuiyās should always be referred to as 12 in number is less clear. It may be that the term was originally "Bar" or "great," and somehow got changed in course of time to Bāro or twelve; but this seems unlikely. All that can be said in explanation is that twelve seems to be a favourite number to be fixed for councillors or feudatories in the constitution of kingdoms in this part of India. The Rājā of Jaintiā had twelve *dalaīs*, and we shall see subsequently that when Viśva Simha came to the throne, he appointed twelve chief Ministers of State.†

The tradition current in Assam regarding the immigration of the Bāro Bhuiyās of this Province is as follows:—A Rājā of Kamaṭhapura named Durlabha Nārāyaṇa went to war with another Rājā named Dharma Narāyaṇa, who called himself Gaudeśvara—the Lord of Gauḍa.‡ When peace was concluded Gaudeśvaraḥ sent seven houses of Brahmins and seven of Śūdras (Kayasthas) to Durlabha who settled them on his frontier as lords of the marches and gave them lands and slaves. From the position accorded to them, it seems certain that they must have been persons of position in their own country. The names of the seven Brāhmins were Kṛishṇa Paṇḍita, Raghupatī, Rāmavara, Lohār, Bāyan, Dharma and Mathurā; and of the seven Kayasthas— Hari, Śrī Hari, Śrīpati, Śrīdhara, Chidananda, Sadānanda and Chaudivara. The last mentioned, who was the ablest and

* It is in fact simply the Sanskrit equivalent of the Persian word Zamīndār. The title was sold by the last kings of Cachar to any one willing to pay for it. Dr. Wise's essays on the Bāro Bhuiyās of Bengal will be found in the J. A. S. B. 1871, p. 197 and 1875, p. 181.

† Cf. also the 12 *misals* of the *Khālisa*.

‡ The whole story is told at length in the *Guru Charitra*.

§ It appears that this rule was often claimed, even by petty princes, and in the time of the visit to Paundradesa of Jayapīḍa, the Rājā of Kāśmīrā (779-813 A. D.) there were no less than six petty princes in the province of Gauḍa or Varendra all of whom claimed the title of Gaudeśvara. The same state of affairs is said by Tārānātha to have prevailed in the beginning of the ninth century, immediately before the rise of the Pāla princes. (Arch. Sur. of Ind. Vol. XV, p. 111.)

most learned, was chief of the Bāro Bhuiyās, and acted as their priest, from which fact he was also known as Devidāsa.* A story is told of Chaṇḍivara to the effect that he and the other Bhuiyās† went home to fetch their families, and that on starting to return they were seized by Gaudeśvara and cast into prison. Shortly afterwards a paṇḍit from Benares visited the country and defeated all the learned men there in argument. The king confronted him with Chaṇḍivara, who soon overcame him, and he left the country covered with shame at his defeat. This so pleased the king that he at once released Chaṇḍivara and his companions and supplied them with boats in which to return to Kāmarūpa. They went and settled at Puimagarī, where Chaṇḍivara earned the gratitude of the peasantry by constructing a bund in Baṅgsi pargana, which the Chaudhri of the place, by name Gandharva Rāi, had in vain attempted to make. Subsequently the Bhotiās raided and carried off a number of people including Chaṇḍivara's son Rājadhara. Gandharva Rāi fled to the south bank of the Brahmaputra, but Chaṇḍivara with the other Bhuiyās followed up the Bhotiā raiders and rescued their captives.

After Nilāmbara had been overthrown by the Musalmāns under Husain Shāh and the latter had in their turn been expelled by the Ahoms, the country appears to have been broken up, as it had often been before, into numerous petty kingdoms, and amongst the rulers of these small principalities were twelve Bhuiyās, but whether these were descendants of the Bhuiyās imported by Deveśvara or not is uncertain.

* His son Rājadhara was the great grandfather of Saṅkara Deva, the celebrated religious reformer.

† The following list of Bhuiyās is taken from Lakṣminārāyaṇa's *Purushārvalī*: Chāru, Ugurī, Kusum, Kalā, Lukī, Jhārgāoñ, Kabila, Karnapur, Phulgurī, Bijni, Dighala and Pratāp. Of these Ugurī, Lukī, Jhārgāoñ, Karnapur, Phulgurī, Bijni and perhaps Dighala are names of places, and Chāru, Kusum, Kāliu, Kabila and Pratāp are the names of rulers whose states are not mentioned. The twelve Bhuiyās were not the only rulers in the country during this period of anarchy. Amongst others, two brothers named Chaudana and Madana are mentioned by Buchanan Hamilton as having ruled for eight years at a place called Marālāvāsa about twenty miles north of Kamāthapura. In a lecture by Bābū Rām Chandra Ghosh, quoted at page 407 of Hunter's *Statistical Account of Koch Bihār*, it is stated that Chaudana and Madana were the children of Hariā Maṇḍal by his wife Jirā. But as will be seen hereafter, there is not sufficient evidence to justify this statement. The same Bābū adds that Chaudana became king in 1511 and was succeeded by Viśva Siṁha in 1524, after a reign of thirteen years. Guṇābhīrām mentions the kings of the following places as having been subdued by Viśva Siṁha:—Dimuriā, Belkola, Bāni, Lukī, Bogāi, Pāntan, Boko, Bāngāoñ, Moirāpur, Bholāgāoñ, Chāigāoñ, Barnagar, Darrang, Karāibāri, Attiābāri, Kamāthabāri, and Balarāmpur.

THE KOCH KINGS OF KÁMARÚPA.

In the meantime the Koch chiefs were gradually rising to power.

Bisu and Sisu.

In tracing their history I shall follow generally the account given in the *Purushanāma* or *Vamśāvali* of Rájá Lakshmi Náráyaṇa Kuār, but shall collate this with other versions and endeavour, where they differ, to show which is most probably correct.

The account begins with the usual attempt to prove that the ruling tribe was of Kshattriya descent. It says that Sahasra, son of Rájá Haihaya stole the milch cow of Jamadagni. Paraśurāma, son of the latter, on hearing of the theft, slew Sahasra and restored the cow to his father. In revenge, Sahasra's sons, taking advantage of Paraśurāma's absence, killed Jamadagni and cut off his head. When Paraśurāma returned, he waged a war of extermination against the Kshattriyas and recovered the head of Jamadagni, whom he then restored to life. The remnant of the Kshattriyas, flying before the wrath of Paraśurāma, assumed the guise of Meches and discarded the sacred thread. They multiplied rapidly, and eventually a chief was born whose name was Hidri, and who had twelve children—Pānbar, Phodelá, Āorko Guabar, Fed Fedu, Barihana, Jukuabar, Káthya, Baihagu, Meghá, Goratá, Jogai and Dukharu.* These sons founded twelve families and from one of these sprang Hariá Maṇḍal. One day, when his wife Hírā was carrying his mid-day meal to him in the fields, she was met by Śiva, who had assumed the form of Hariá Maṇḍal, and in that guise consumed the food intended for her husband and had intercourse with her. There was some misunderstanding between her and her husband in the evening, but matters were soon put right, for Śiva appeared to Hariá in a dream and informed him that it was he who had eaten his food and taken such liberties with his wife, and stated that as a result of his intimacy with her, a son would be born who would rise to be a mighty chief. To complete the story, the legend adds that the lady was none other than an incarnation of Párvatī, who had been made to take the form of a Mecháni as a punishment for causing Śiva's death by a curse. Ten months later, on the 1st day of the Bihu, the promised son was born, amidst universal rejoicings, and was named Bisu, in commemoration of the time of his birth. By his second wife Jírā or Dhirá, Hariá Maṇḍal himself begot a son, whom he named Sísu.

The *Purushanāma* continues, that in his boyhood Biśu was known as the chief of cowherds. When he grew up, he at once began to extend his father's principality by bringing the country ruled by the

* The occurrence of the number twelve will again be remarked. The *Purushanāma* also speaks of the twelve sons of Sahasra.

Bhuiyás under his power. He defeated the Bhuiyás of Uguri and Luki* but was defeated by Cháru Bhuiyá. While wandering about after this defeat, he was met by Párvati disguised as a Meeháni, and following her advice, he again attacked Cháru Bhuiyá at the time of the Baisákh Bihuá, when his soldiers had dispersed for the festival, and thus overcame and killed him and the few soldiers that were left with him. Following up this success, he defeated and slew the Bhuiyás of Phulguri and Bijuí, the former of whom is described as being of the race of S'iva.† He gradually extended his power, and after defeating all the Bhuiyás, went and‡ built a magnificent city in Koch Bihár. He worshipped S'iva and Durgá and gave gifts to the disciples of Vishnu. Other accounts mention that he assumed the Hindú name of Viśva Simha and that his brother S'isu called himself S'iva Simha, while the men of his tribe who accepted Hinduism described themselves as Rájavanśís. He gave alms to the priests, and astrologers, and also to the poor and to the visitors from distant countries. He made S'isu Yuvarája, and appointed twelve ministers from the twelve chief families of the Meches, viz :—Two councillors (one for foreign and one for internal affairs), a commander of the army, a bráhmaṇ, an astrologer, a physician, a betelnut-bearer, a cook, a store-keeper, an accountant, a *thár* (prophet) and a porter. He also introduced a regular state organization by appointing *Thakuriás* over 20 coolies, *Saikiás* over 100, and *Hazáris* over 1,000, *Umrás* over 3,000, and *Nawábs* over 66,000. Excluding the old and the young, he took an account of his able-bodied male subjects, and found that the number of persons fit to carry arms amounted to no less than 5,225,000. He is said to have possessed numberless elephants, horses, asses, buffaloes, and camels. It is related that he went to make war on the Ahoms, but fell short of provisions on the way, and thinking it wrong to plunder, returned home.§ He was preparing to undertake a second expedition, when Káli appeared to him and told him not to engage in war himself. She told him instead to marry, and prophesied that he would have eighteen sons, who would conquer the whole world. In accordance with the divine mandate, he married in one day eighteen wives according to the Gandharva ceremony. Two of these wives

* If this account can be relied on, it seems to prove that the Koch Kingdom rose in Kámarúpa and gradually extended itself westwards, instead of beginning in Raṅgpur as is generally stated.

† It may be interesting to note that the use of firearms is referred to in the account of his battles with the Bhuiyás.

‡ Guṇábhiraṃa says that he took from them as tribute muga silk, cotton, copper, tin, lead, silver, gold, iron, potters' clay, &c.,

§ The Ahom version which says that he was defeated and made tributary, is more likely to be the real explanation of his return.

came from Nepál, two from Kámarúpa, one from Kásmíra, four from Benares, three from S'onitapura (the Modern Tezpur) and two from Mithilá. Ten months later, each of his wives gave birth to a son, the names of whom were Nara Simha, Mallá Deva, who was afterwards known as Nara Náráyaṇa, Sukladhvaja, Gosáñ Kamala, Maidan, Rám Chandra, Súra Simha, Mána Simha, Mechá, Vrishaketu, Ráma Náráyaṇa, Ananta, Dípa Simha, Hemadhara, Megha Náráyaṇa, Jagat Chandra, and Súra.

Being undecided as to who should succeed him, Viśva Simha, following the advice of Sadá Śiva, caused 18 different articles (including gold, silver, iron, earth, &c.) to be tied up in bundles, and asked his sons to bring each one a bundle. Nara Simha brought the bundle of gold, and so was appointed to be ruler of a foreign country. Mallá Deva brought the bundle of earth, and was thus selected to succeed his father as king. Sukladhvaja, who brought the bundle of iron, was made Yuvarája, while Gosáñ Kamala, because he brought the bundle of wheat, was declared to have for his inheritance unspotted fame and pure glory, and to be destined to construct roads, monasteries and tanks. Minor appointments were allotted to the other sons, according to the contents of their bundles.

Viśva Simha died, after reigning 25 years, of sores brought on by the curse of a Bráhmaṇ,* but before his death, he enjoined his ministers never to get brides for his family from foreign races, but only from amongst the Moch, Koch and Kachárá tribes. It is said that he was carried up to heaven from S'onitanagara in a chariot driven by Nandí, who had been sent to earth by Śiva for this purpose.

Guṇábhírám tells a story which is not referred to in this Purusha-náma. He says that Viśva Simha re-discovered Kámákhyá. The story runs that he went to Niláchala, where he found only a few houses of Meches. No one was at home except one old woman, who was resting under a fig-tree, where there was a mound which she said contained a deity. Viśva Simha prayed that his followers might be caused to arrive, and his prayer was at once granted. He therefore sacrificed a pig and a cock, and resolved, when the country became quiet,* to build a golden temple there. He ascertained that the hill was the site of the old temple of Kámákhyá, the ruins of which he discovered, while the image of the goddess herself was dug up from under the mound. Sub-

* He had asked the Bráhmaṇ why people worship the big toe of a Bráhmaṇ, and on being told in reply that it was because it contained white blood, which is the blood of Brahmá, he had his toe pierced through with a chisel. No white blood was seen, but red blood flowed and could not be stopped, and so the Bráhmaṇ died saying, "As you have caused me this pain, so you also shall die of sores."

sequently he re-built the temple, but instead of making it of gold, he placed a gold coin between each brick. He brought Brāhmanas from Kannauj, Mithilā, Benares, &c., to perform religious ceremonies at this and other temples. Guṇābhīrām adds that in Viśva Śimha's time Raṅgalugrah was the eastern boundary of Koch Bihār.

Taking advantage of the absence of Mallā Deva and Śukladhvaja,

Nara Narayana.

who had been sent to Benares to study under a hermit of the name of Brahmānanda, Nara

Śimha seized the throne. News of this occurrence was sent to Mallā Deva by his nurse, and he at once returned with Sukladhvaja and defeated Nara Śimha, who fled to the Morang country. Mallā Deva and Sukladhvaja defeated the Morang king, and Nara Śimha fled to Nepāl, but the king of Nepāl was similarly defeated, and he then took refuge in Kāśmīra. Being unable to cross the passes Mallā Deva gave up the pursuit and returned to his own country. The *Vaṃśāvalī* says that Nara Śimha subsequently became ruler of Bhotān, and that Pallavas, or local rulers were appointed by him. Their names were Dagar, whose jurisdiction lay in the east; Tongsār in the south; and Pāro in the west. Three Jongpons* are also mentioned as rulers over Tasirjim, Pūṇakhātā and Undiphērā, respectively, and reference is also made to the "great dewan of Dunerkāl," the 'lord of correspondence.'

Returning to Mallā Deva and Sukladhvaja, it is stated that on their return Mallā Deva became king and assumed the name of Nara Nārāyaṇa. He made Sukladhvaja his Yuvarāja, under the name of Śīlarāi, the king of the kites. He at once began to turn his attention to the extension of his kingdom, and first of all, he determined to carry out the decision formed by his father to conquer the Ahoms. Bearing in mind the cause of his father's failure, he first of all arranged for the construction of a road as far as a place called Parasu Kuthar, and this task was entrusted to Gosāiṇ Kamala. The latter set to work with vigour, and at the end of a year had completed the road, and had also constructed tanks at regular intervals along it.* Nara Nārāyaṇa then called in Hindú paṇḍits and astrologers, and, after following the usual Hindú observances, prepared to start. But before doing so, he organized a Kachāri dance on the banks of the Sankosh, and calling in the aid of a Shamanist, went through the aboriginal rites of his tribe, this leaning to his old tribal superstitions being justified in the *Vaṃśāvalī* by the statement that Śiva himself had directed him to observe them. He then started. One night he halted at Tamtumani, where twelve tribes brought him pre-

* The remains of this road are still visible from North Lakhimpur; the portion which runs through North Kāmrūp and the Mangaldai subdivision is still known as the Gosāiṇ Kamala Ah.

sents, in consequence of which the place was called Bāraḍala. On another occasion he stopp'd at Bhramarakuṇḍa where he built a fort and a monastery on a hill called Nil Khámár, a family of Kacháris being appointed to attend on Trisúladeví, the goddess of the place. It is said that he fixed the Gosáin Kamala Ali as the boundary north of which the Kachári, Koch and Mech aboriginal forms of worship should be practised, while south of it Hindú observances were to be followed. Further on he halted at Singiri Parbat, and after that on the Bharali.

In the meantime, the Ahom king who had heard of the invasion, summoned a meeting of his councillors, and with their advice, caused an iron goat to be made. This goat he sent to Nara Náráyaṇa, saying that if he could sever its head from its body at one stroke he should have his kingdom, but not otherwise. Nara Náráyaṇa offered two goats to Káli, and then taking a sharp sword struck off the head of the iron goat with such force that the sword buried itself in the earth. On hearing of this, the Ahom king was filled with fear, and fled to Charái Kharung.* Nara Náráyaṇa then entered Garhgáon.† Finding that the Ahom king was not disposed to fight, Nara Náráyaṇa, after halting for a year at Garhgaon sent word to him saying that if he wished to fight he should come prepared, and that if he did not come, and at the same time did not surrender, he would go and attack him at Charái Kharung. On receiving this message, the Ahom king agreed to acknowledge himself a feudatory of Nara Náráyaṇa, and sent as hostages a prince named Sundara and twenty families of the Ghar-mátha clan, together with one pot of gold and another of silver, 60 elephants and 60 pieces of cloth ‡

After that the Koch king left Garhgáon and proceeded first to Marang and thence to Demera.

* According to other accounts, including that in Gunábhírám's *Asám Buranjí*, the Ahom king is said to have for a time averted defeat by sending forward an army of S'údras mounted on cows. A similar stratagem is referred to in the *Rājamāllá* or *Chronicles of the kings of Tippera*.

† The *Purushanāma* states that this was formerly the capital of the Chutiya Rájá. The Ahoms were unable to conquer this king and so made peace with him. Their ruler married his daughter, and through her discovered that her father's supremacy was due to the possession of a golden cat. He made his wife steal this for him, and when he had got it, he attacked and killed the Chutiya Rájá, whose sons fled for refuge to the Miri and Miching country.

‡ Sundara and his comrades were subsequently released owing to Sundara having succeeded in worsting Nara Náráyaṇa in a gambling contest. The Ahom chronicles add that when they returned to their own country, they took back goldsmiths, blacksmiths, and other artisans with them. (Gunábhírám's *Asám Buranjí* pp. 68 and 117)

Subsequently he deputed Silarái to go and conquer Harmeśvara, the king of Hidamba or Cachar. It is related that Silarái broke open the gate of the capital with two strokes of his riding whip.* Seeing this, Harmeśvara feared to offer resistance and at once made his submission. He gave 84 elephants and other presents and agreed to pay an annual tribute of 70,000 silver and 1,000 gold mohars and 60 elephants.† The Koch king then sent messengers to the Rájá of Manipur, calling on him to submit and pay tribute, and the Rájá feeling himself too weak to resist so powerful a prince, at once complied with his requisition. His tribute is said to have been fixed at Rupees 20,000, 300 gold coins and ten good elephants. After this Silarái gave battle to the king of Jaintiá and slew him with his own hand. Nara Náráyana set up the deceased Rájá's son as king, after making him promise to pay an annual tribute, and then despatched Silarái to wage war against the king of Tippera. It is said that Silarái's army consisted of 40,000 men, and that in the battle which took place, no fewer than 18,000 men of the Tippera army were slain. The king is said to have met his death, like the king of Jaintiá, at the hands of Silarái himself. Nara Náráyana placed the deceased king's brother upon the vacant throne, and made him pay tribute to the extent of Rs. 10,000, one hundred gold mohars and thirty war horses. In the meantime, Viryavanta the Rájá of Khairam, having heard of Nara Náráyana's prowess and wishing to avoid the fate which had overtaken the kings of Jaintiá and Tippera, hastened to make submission. His tribute was fixed at 15,000 Rupees, 900 gold coins, 50 horses and 30 elephants. He was also made to promise not to stamp coins in his own name, but in that of Nara Náráyana ‡. The next victory was over the Rájá of Dimurá who was taken prisoner, but was subsequently released on his undertaking to pay an annual tribute of Rs. 7,000. In the course of this expedition, Nara Náráyana is said to have straightened the course of the Brahmaputra opposite Páṇḍunatha, a place near the foot of the Niláchal hill, some four miles west of Gauháṭi. After stopping some time at a village

* Other similar feats are attributed to Silarái. On one occasion he is said to have kept over the Bharali river on the back of his war horse.

† This story of the invasion of Cachar by Nara Náráyana is confirmed by a tradition current amongst the Deháns, a small tribe of that district, who claim to be descended from the Koches who invaded the district. According to their account, however, the leader of the expedition was not Silarái, but his brother Gośáñ Kamala.

‡ No coins of this king have as yet been found, and the earliest coin of the Rájás of Jaintiá which I have seen is dated more than a hundred years later. Excluding Ahom coins, the only extant coins of this period stamped by kings in Assam are those issued by Nara Náráyana and his successors.

named Rohá, Nara Náráyana determined to attack the king of Sirathá (Sylhet), whose kingdom is described as being near Jaintiá, and who is said to have been a very powerful prince. Messengers were sent calling upon him to submit, but this he refused to do, and Silarái was accordingly despatched with a strong force to overcome him. He met the army of the Sylhet king, and a battle took place which lasted three days. At the end of this time as the scales of victory still hung in the balance, Silarái became impatient, and so seizing his sword and shield, he rushed forward like the kite, from which he took his name, and attacked the hostile army. It is related that 100,000 soldiers fell before his all-destroying sword, and that at last the king of Sylhet himself was slain. The king's brother Asirái then tendered his submission and returned with Silarái to the court of Nara Náráyana, who appointed him king in the place of his brother and fixed his tribute at 100 elephants, 200 horses, 300,000 Rupees and 10,000 gold coins *

Being thus victorious in three directions, Nara Náráyana determined to invade the kingdom of Gaṇṇ (Gauda). Before doing so, he visited the temple of Kāmákhya, which he found in ruins. He intended to rebuild it, but being possessed by Śani (or the planet Saturn) he postponed this pious act until after his proposed expedition. This incensed the goddess against him, and his army, which was led by Silarái, was defeated by the Pasha of Gaṇṇ, after a fight which lasted for ten days. Silarái himself performed prodigies of valour, and after his weapons had been broken he disdained to fly, and so continued to fight with rushes until they also were exhausted, and he was taken prisoner. Subsequently, through the favour of Káli, he succeeded in curing the Pasha's mother, who had been bitten by a snake which had been sent into her presence by Silarái in the form of a rope. In return for this cure, Silarái was released, and the Ganges was fixed as the boundary between the two kingdoms.

On his return home, he and his brother at once set about the erection of the Kāmákhya temple.† Twice they erected a temple of stone, and each time it fell in a night. Then Párvatí appeared in a dream and

* Sylhet was conquered by the Musalmáns in 1384 A. D., but may have been temporarily independent at the period here referred to, which was a troublous one in Bengal. Or it may be that the king of Sylhet here referred to was the ruler of Láur, who long continued to maintain his independence of the Musalmán invaders.

† An inscription within the temple records its erection by Silarái during the reign of his brother Nara Náráyana. This inscription which bears date 1487 Ś'ak (1565 A. D.) will be referred to again further on. Other accounts say that the temple took ten years to build. (Gunábhírám's *Áśám Buranjí* page 63.)

said that the Musalmáns had destroyed the old stone temple, and as it was now the Kali Yuga, the new one should be constructed of bricks. The brick temple, was constructed in six months, and then Nara Náráyana consecrated it with numerous sacrifices, including 140 men, whose heads he offered to the goddess on copper plates.* He made a grant of land for the maintenance of the shrine, and gave away alms to the extent of Rs. 25,000. He also caused a statue of himself to be made and placed within the temple† At this time he caused roads, monasteries and tanks to be constructed, and trees to be planted. Under his auspices the Sástras were published and the Ratnamálá was composed, and even the common people were made to study religious books. Sáktism was the State religion, but Vaishnavism was more than tolerated, and great honour was done to Sankara Deva, Deva Dámodara, and other Vaishnava divines. The country enjoyed a period of peace and religion, and thrived exceedingly.

Two years later, the Gauṛ Pasha's mother died, and Nara Náráyana then combined with Akbar to attack him. Silarái invaded his kingdom with an army from the east, while Rájá Mán Singh, who was in command of the Imperial army, advanced upon him from the west.

The ruler of Gauṛ being thus attacked from two sides at the same time was easily defeated, and his kingdom was then divided between the Koch king and the Emperor of Delhi. The Pasha himself fled to the country of the Feringhis.

While engaged on this expedition, news came from the capital that a son had been born to Silarái.‡ The latter, however, was destined never to see him. He was attacked by small-pox and died on the banks of the Ganges, after enjoining his brother Nara Náráyana to take care of his boy. Nara Náráyana performed the funeral ceremonies with great pomp, and at the conclusion sacrificed a bull.

After Silarái's death, a long period of peace ensued, during which the people enjoyed great prosperity, while Nara Náráyana gave such encouragement to religion that he became known as "the pious king."

* The offering of human sacrifices was by no means uncommon among the Sákta of former times. Similar sacrifices were frequently offered at Sadiyá, and at Beltola in Kámrúp, and it was the abduction of four British subjects for this purpose which led to the annexation of Jaintiá in 1835.

† Two statues, said to represent Nara Náráyana and Silarái, are still to be seen within the temple. An older figure carved in the rock on the road leading up to it is said to represent Naraka, the first-recorded guardian of the shrine.

‡ It is related that in honour of this event grants of Brahmottar land were made in the village of Chinakoná (in the Maṅgaldái sub-division.) This grant still exists.

In the meantime Silarāi's son, whose name was Raghu Rāi, was growing up. He was a great favourite with the king, and when he attained the age of 16, two girls were given to him as wives. It is added that subsequently the number of his wives reached 120.

Shortly after Raghu Rāi's marriage, Nara Nārāyaṇa himself was at last blessed with a son, to whom he gave the name of Lakshmi Nārāyaṇa.* Up to this time, Raghu Rāi had lived in hopes of succeeding his uncle; but hearing that he was now likely to be passed over in favour of the latter's own son, he left the capital with a small following, and settled down at Baranagara, or Vijayanagar, where he excavated a tank and built a town called Ghilnjaipur. Nara Nārāyaṇa sent a messenger, named Para Kārji, to recall him; but he refused to return, and when Kārji invested the place in order to seize him, he fought with, and defeated him. On hearing of this, it is related that Nara Nārāyaṇa professed to be pleased at his nephew's prowess, and as an acknowledgment thereof, sent him his wives, together with a large amount of money and jewels from the royal treasure-chest. A few months later, a heavy flood occurred, and taking advantage of it, Raghu made an expedition in boats and raided Bair Baku. When Nara Nārāyaṇa heard of this, he went with an army to chastise him, but was prevented from attacking him by Raghu sending his 120 wives to attack Nara Nārāyaṇa's army. When the latter heard of this, he determined not to fight and so came to terms.

The kingdom was divided into two parts, and it was settled that Raghu should rule the country east of the Sankosh and that Lakshmi should succeed his father as Rājā of the country west of that river. Raghu continued to reside at Baranagara. He visited five places of pilgrimage,—Ganeśa, Kedāra, Gokarna, Garṇa, and Kāmesvara; and rebuilt the Maṇikūṭa Temple, which had been broken by the Musalmāns.† He endowed it with grants of land, and when it was finished, he sacrificed at the shrine 700 men, whose heads he offered to the goddess in copper plates. He had a large number of sons, including Parīkshit, Indra Nārāyaṇa, Jādurāi, Bali Nārāyaṇa, and Māna Simha. He is said to have been devoted to religion and to have made liberal gifts to Brahmāns. It is related that he buried 30,00,000 Rs. under the staircase of his palace. In the end he was killed by a demon (*daitya*) sent by an ascetic whose company he had exhorted his son Parīkshit to eschew.

* It is said that Nara Nārāyaṇa married Kamala-priyā, the daughter of Saṅkara Deva's brother Rām Rāi. According to other accounts, however, it was Silarāi who married her.

† This is the Hayagrīva Temple at Hajo, which stands on the hill called Maṇi. An inscription in the temple, dated 1583 A. D., mentions Raghu Deva as the king under whose orders it was re-built.

Parikshit, on the death of his father, went to Prāgyotishapura and worshipped three times at Kāmākhyā. An astronomer attached to the temple foretold that unless he became king within two days, he would not get the kingdom for twelve years, and he accordingly set sail and proceeded with all haste to Baṇanagara, where he was hailed as king. It is said that his boatmen were so exhausted by their exertions that on arriving they all lay as if dead, and were only brought back to life by the tender ministrations of 140 girls (sent for the purpose by Parikshit) who anointed their bodies with oil and acid fruits, and then passed the night with them. Next morning, says the *Vamśāvali* each boatman was married to the girl with whom he had slept. Parikshit is said to have built a town where North Gauhāṭī now stands, and to have mounted cannon at Paṇḍunātha, which were still in position at the time when the *Vamśāvali* was composed. Subsequently war broke out between Parikshit and Lakshmi Nārāyaṇa, and the latter being worsted, went to Delhi, and giving his sister to the Emperor in marriage, implored him to send an army to his assistance.

In accordance with his request, Parānsuḥa and Mukarram Khān were sent against Parikshit. Parikshit was defeated and then entrenched himself in a fort which he built on the banks of the Sankosh, which the Musalmāns besieged for a year without success. They then resorted to stratagem, and by floating rafts of plantain trees down the river by night, made Parikshit believe that they had crossed it and were marching on his capital. Under this impression, he abandoned his intrenchments and hurried back to Vijayanagara.

In the meantime his brother Bali Nārāyaṇa, after taking refuge for a year with a Bāra Bhuiyā family residing at Maniāī village in Darang, went to the Ahom king, Svarga Nārāyaṇa, and invoked his aid against the Musalmāns. The latter took the field with a large army, and defeated the Musalmāns, who fled across the Karatoyā. Svarga Nārāyaṇa then placed Bali Nārāyaṇa, whom he re-named Dharma Nārāyaṇa, in charge of the conquered country, the boundaries being on the east the Bharali, on the west the Karatoyā, on the north the Gomiri mountains, and on the south the hills of Siri.

COMPARISON OF THE VAMŚĀVALI WITH OTHER SOURCES OF INFORMATION.

Thus far the *Vamśāvali* of Rājā Lakshmi Nārāyaṇa Kuar. I now refer briefly to other accounts of the events with which it deals.* And first of all, as to the parentage of Bisu and Sisū.

The rise of the Koch
dynasty.

* Minor points in which other accounts corroborate it, have been noted *passim* in the abstract of the *Vamśāvali* given above.

Rājā Prasiddha Nārāyaṇa's *Vanśāvalī* agrees with it in all particulars, and the account given by Guṇābhīrām in his *Asām Burānji* is also practically the same. In the latter, however, Hājo is mentioned as the father of Hīrá and Jīrá; it does not appear from his account that either of them had a husband, and Śiva is said to have been the father of Sisu as well as of Bisu. Buchanan Hamilton says that Hājo Koch had two daughters, Hīrá and Jīrá, of whom the former was married to Hariyá Mech. She had a son, Bisu, while her sister (whose husband is not mentioned) had a son, Sisu. He adds that Śiva was claimed as the progenitor of both Bisu and Sisu. The Raikat family of Baikunthpur claim to be descended from Sisu, and over that he was the brother and not the cousin of Bisu. Another account says that Chandan and Madan were the children of Hariyá Mech by his wife Jīrá and that Śīsu and Bisu were born of his wife Hīrá by the god Śiva.*

From these accounts we may, I think, conclude that Śīsu and Bisu were the children of Hariyá Mech by his wives Hīrá and Jīrá, and that the latter were daughters of Hājo, who was of the Koch tribe, a fact which is proved not only by the authorities mentioned above, but also by the fact that the existing representatives of the family still describe themselves as "Koch," and by the Musalmán names for the country, Koch Bihār and Koch Hājo. Ralph Filch also refers to Sukladhvaja as Shukl Koch. There is not sufficient evidence for assuming that Chandan and Madan belonged to this family.

There is less unanimity regarding the kings by whom the Koch kingdom was consolidated and extended and the period at which it was divided into two parts.

The division of the country into two kingdoms.

According to Buchanan Hamilton†, it was Hājo who founded the kingdom, and Viśva Simha who divided it into two parts, giving the position east of the Sankosh to Sukladhvaja and the position west of that river to Nara Nārāyaṇa. The same version is given in the family history of the Rājās of Bijul. Other authorities however, agree with Rājā Lakshmi Nārāyaṇa's *Vanśāvalī*. Bābū Rām Chandra Ghosh, to whose lecture reference has already been made, says that Nara Nārāyaṇa "with the assistance and advice of his younger brother Sukladhvaja, "otherwise called Śīlarāi, extended his kingdom in all directions. He "conquered the whole of Kāmarūpa and carried off in triumph the "chhattra or umbrella of the king of Assam. The king gave to his elder

* Lecture delivered by Bābū Rām Chandra Ghosh before the Koch Bihār Hitaishipī Sabhā, and printed in Calcutta at the expense of the Rāj in 1935.

† Hunter's Statistical Account of Raigpur, page 351.

"brother, Nara Simha, the pargana of Paṅgá; and to his younger brother "Sukladhvaja, together with the title of Rájá, he gave Bijni, Darrang, "Bentakí (sic, Beltola?) and the northern part of the Kámákhyá "kshetra."

In Bisúésvar's *Asám Buranjí*, the agreement is still greater. He says: "Rájá Nara Náráyaṇa, having no male issue, determined to appoint "his nephew Raghu Deva as his successor. When old, he had a son, and "Raghu Deva became hopeless. The latter therefore, quitted one day the "palace, under the pretext of going a hunting, but the Rájá, in order "to console him, allotted to him a portion of the Ráj."

The account given by Guṇábhírám on pages 59-71 of his *Asám Buranjí* also confirms that contained in the *Vaṁśávali*, and so does the allusion to the conquest of Garlgáoñ in the Ahom chronicles, and also the Musalmán version of the events dealt with in the *Vaṁśávali* as described in the *Akbarnámah*, except that in the latter, Raghu's rebellion is said to have taken place on the death of Nara Náráyaṇa, and not during his life time.*

In addition, we have contemporaneous evidence in the shape of two inscriptions, one of which is inside the Kámákhyá temple and the other in the temple of Hayagríva at Hájo. The former runs as follows:

"Glory be to king Malládeva, who by virtue of his mercy, is kind to the people; "who in archery is like Arjuna, and in charity like Dadhichi and Karnas; he is "like an ocean of all goodness, and he is versed in many śástras; his character is "excellent, in beauty he is as bright as Kandarpa; he is a worshipper of Kamá- "khyá. His younger brother Sukládeva built this temple of bright stones on the "Níla hillock, for the worship of the goddess Durgá, in 1487 Saka (1565 A. D). "His beloved brother Sukladhvaja again, with universal fame, the crown of the "greatest heroes, who like the fabulous Kulpataru, gave all that was devoutly asked "of him, the chief of all devotees of the goddess, constructed this beautiful "temple with heaps of stones on the Níla hill in 1487 Saka."

Amongst the stone figures in the interior of this temple are two which are said to represent Malládeva and his brother Sukladhvaja.

The inscription inside the temple of Hayagríva may be translated thus:—

"There was a ruler of the earth named Viśva Simha; his illustrious son, the "most wise king Malládeva, was a conqueror of all enemies. In gravity and "liberality and for heroism he had a great reputation, and he was purified by "religious deeds. After him was born his brother Sukladhvaja who subdued

* It may be explained here that Muhammadan historians refer to the countries ruled by Parikahit and Lakshmi Náráyaṇa as Koch Hájo and Koch Bihár respectively. Nara Náráyaṇa was known to the Musalmáns as Bál Gossáñ, and Sukladhvaja as Shukl Gossáñ.

"many countries. The son of this Sukladhvaja was king Raghudeva, who was like the greatest man of the Raghu race: his glories spread out in all directions; the lord of Kámarúpa, in obedience to the order of destiny, is the slayer of the wicked, who was like water to the flames of the fire of sorrow of the vast populace. Of the seeds of Sukladhvaja, a king was born of the name of Raghudeva, who consoles innumerable persons, and is a worshipper of the feet of Krishna; the king coming of age had a temple built on the hillock called Mani hillock, in 1505 Saka (1583 A. D.) The most skilful and efficient artisan Sridhara himself built it."

Apart from the authorities quoted in favour of the version given in the *Vaṁśávali*, it seems probable that that version is correct; first, because it is far more detailed than any other, and secondly, because it is the version given by the descendants of Silarái who would not have been likely to represent him as a subject of Nara Náráyaṇa if he had really been an independent prince. We may, therefore, accept the story as told in the *Vaṁśávali* as substantially correct.

The only alternative to accepting the version given in the *Vaṁśávali* is by supposing Silarái to have outlived his brother and to have rebelled when Lakshmi Náráyaṇa succeeded him. This is the version given in the *Akbaruámah* (J. A. S. B. 1872, page 53), and it correct would simplify the meaning of the inscription in the temple at Hájo. The account given in the *Vaṁśávali* is however, so circumstantial that, in the absence of further evidence, it seems impossible to gainsay it.

MUSALMÁN INVASIONS DURING THE PERIOD DEALT WITH IN THE VAṂŚÁVALI.

The *Vaṁśávali* says very little about the relations of the Koch kings with the Musalmáns, and it will therefore be useful to supplement it in this respect by accounts drawn from other sources.

And first should be mentioned the invasion of Kálá Páhar, otherwise known as Rájú, which took place in 1553 A. D. It is said that Nara Náráyaṇa was afraid to fight him, and allowed him to pass up the Brahmaputra unmolested. He was a convert from Hinduism, and like all apostates, was a zealous persecutor of the faith which he had before professed, so that his name is remembered to this day, both in Assam and Orissa, as the arch destroyer of temples and images. To him is attributed the destruction of the old temples at Kámákhyá and Hájo, but beyond these acts of sacrilege, he appears to have left no mark in the country. His invasion is not referred to in the *Vaṁśávali*, except incidentally in the statement that Nara Náráyaṇa rebuilt Kámákhyá "which the wicked Musalmáns had destroyed.*"

* I have not referred in the text to the narrative of Ralph Fitch who visited Koch Bihár between 1583 and 1581, and states that the king then ruling was

Nara Narayana's submission to the Emperor.

Another incident not mentioned in the *Vamsāvali* is that related in the following extract from the *Akbar-nāmah* :—

"To the events of this time (1578 A. D.) belongs the arrival of the "Peshkash from Bengal and Koch Bihār. Raja Bāl Gosaiñ (Nara "Nārāyaṇa) who is Zamindār of Koch, submitted again, and sent valuable presents from Bengal, with 54 elephants "

On the other hand, the Musalmān historians of the period make no mention of the assistance said to have been rendered by Nara Nārāyaṇa in the subjugation of Dāūd Shāh.

The *Akbar-nāmah* tells us that when hostilities broke out between Lakshmi Nārāyaṇa and the ruler of the eastern Koch kingdom, the former made his submission to the Emperor and met Rājā Mān Singh at Anandapur. It is added that he gave his daughter in marriage to the latter, and not to the Emperor as stated in the *Vamsāvali*.

In the *Tūzuk i Jahāngīrī* it is stated that, in 1618 A. D., Lakshmi Nārāyaṇa paid his respects personally at court in Gujrāt and presented a *nazzar* of 500 mohars.

The invasion of Parīkshit's kingdom however, is attributed, not to the initiation of Lakshmi Nārāyaṇa, but to a complaint made by Raghunātha, the Zamindār of Sosang, whose family Parīkshit had imprisoned.

The *Pādishāh-nāmah* contains a full account of the invasion which followed. The following abridgment is taken from the translation given by Blochmann in the J. A. S. B. for 1872 (pages 53-52). Mukarram Khān invaded Koch Hajo with 6,000 horse, 12,000 foot and 500 ships, and took Parīkshit's fort at Dhubri, at which place he halted

named Suckel Conse (Sukl Koch or Sukladhvaja), because the part of the kingdom which he visited was west of the Sankosh (cf. Blochmann, J. A. S. B., page 240), and this part has never been claimed as having at any time belonged to S'ukladhvaja or his descendants. It is clear, therefore, that there must be some mistake, and as Sukladhvaja was a far more prominent man than his elder brother, the real king, it is not unlikely that Ralph Fitch thought that he was the ruler *de jure* as well *de facto*. Or it may be, that Ralph Fitch's visit took place during the year for which, according to Guṇābhīrām, Nara Nārāyaṇa left his kingdom in charge of Silarāi and wandered about in disguise, in order to avoid the disaster which it was supposed would ensue from the influence of the planet Saturn, under which the astrologers asserted that he had had the misfortune to come. The story of his temporary abdication is not improbable, as the Gapaks have always exercised almost unlimited power over credulous converts to Hinduism, and we have an exact parallel in Ahom history in the case of the king Siva Simha, who abdicated in 1720 A. D. in favour of his wife Phūlēsvari, in consequence of an adverse prediction by the astrologers attached to his court.

* Lucknow edition, III, page 207.

during the rains. Parikshit was defeated in a naval engagement in the Gajādhara river and retreated, first to Khelah and afterwards to Budhnagar on the Manās, where he at last surrendered, and by the Emperor Jahāngir's orders, was sent to Court. His brother Bali Nārāyaṇa, or Baldeo, as he is called by the Musalmān historian, fled to the Ahom king.

* The Musalmāns proceeded, under Sayyad Ilakīm and Sayyad Abā Baqr, to invade the country of the Ahoms, but were destroyed in a night attack. A fuller account of this invasion is contained in the Ahom chronicles, where it is stated that the Musalmāns proceeded as far as Bishpunāth. They were at first victorious and took many captives, but were subsequently defeated by the Ahoms, who had called in the aid of the Kachāris of Khāspur. The cause of the invasion is said to have been the murder by the Ahom garrison, at Koliabar, of a Muhammadan trader who was suspected of being a spy. It is stated that Abā Baqr (who is called Bābākar in the Ahom *Buranji*) and his son Ghīyāsu'd-dīn were slain in the battle, and that the body of the latter was taken back to Hājo and buried there.*

The *Pāḍishāhnāmāh* continues that Bali Nārāyaṇa† then persuaded

* Guṇābhīrām says that this invasion is described in the *Guru Bhatima*, a collection of hymns written shortly after the time of the occurrence by Saṅkar Deva and his disciple and successor, Madhava. I have not been able to procure a complete collection of these hymns, but in a selection of them published by Haribhāṣ Gupta, the only Musalmān invasion referred to (page 79) is one in which the ruler of Gauṛ is said to have been utterly defeated by Nara Nārāyaṇa. In this account, the destruction of images is not mentioned, and it is possible that some other invasion is referred to.

† The Ahoms called him Dharma Nārāyaṇa. In Ahom histories it is said that Bali Narayan or Raghu Deva (accounts differ) gave the daughter of the latter—Maṅgaldāī by name—to Pratāpa Siṁha in marriage. Maṅgaldāī town and river are said to be named after this princess.

Ghīyāsu'd-dīn is said to have been a very pious and learned man, and the sanctity attaching to his tomb was consequently so great, that it became a very sacred place in the eyes of the Musalmāns, and was accordingly known as Powa Mekka. The origin of this name is differently accounted for by a writer in the *Calcutta Review* of 1867. He says that after the death of Hussin Shah's son, Dānyāl Sulṭān Ghīyāsu'd-dīn succeeded him, and brought a colony of Musalmāns to Hājo, and made large assignments of lands for religious purposes. He resolved to build a grand mosque at Hājo, and brought earth from Mekka to give additional sanctity to the place. He died however before completing the mosque, and was buried under the holy earth. It is not known from what source this writer derived his information, but it seems on the face of it more probable than the other story, as it is hard to believe that a vanquished army would carry a corpse so great a distance as from Bishpunāth to Hājo. On the other hand, it is unlikely that Musalmāns re-

the Ahoms to invade Hájó, and the latter agreed and sent him thither with an army. He retook Darrang, and reinforcing his army by some discontented Musalmán Jágirdárs of Hájó, seized also pergunas Luki and Bháomanti, and finally attacked 'Abdu's-salám, the Musalmán Governor of the country.

It is not stated how long these events took, but it would appear from other sources of information, that a considerable time must have elapsed between the retaking of Darrang and the attack on 'Abdu's-salám which led, as will be noted further on, to the defeat and death of Bali Náráyana.

The defeat of Paríkshit is stated to have taken place in 1614 A. D. and the final overthrow of Bali Náráyana in 1637. The Ahom chronicles place the defeat of Abá Baqr in 1549 Sak or 1627 A. D. and state that his army was pursued and the Ahom rule extended as far as Gauháti, and that Bali was set up as a tributary of the Ahoms in Darrang and Gaja Náráyana, brother of the latter, at Beltolá. Subsequently, it is stated, Pratápa Simha became lord paramount of the Rájás of Ráuí, Luki, Mairápur, and other places. These events must have taken time to bring about, and it may therefore, I think, be assumed that Bali became ruler in Darrang at least, if not also in part of Kámrúp, immediately after Abá Baqr's defeat in 1672, so that he ruled there for ten years before his final conflict with the Musalmáns.*

On being attacked by Bali, 'Abdu's-salám reported matters to Islám Khán, Governor of Bengal. Reinforcements were at once sent to him, but owing to the treachery of Sattrajit, the Thánádár of Páudu, the dispositions of the Musalmáns were not as effective as they might otherwise have been. In several engagements in the neighbourhood of Páudú, however, success remained with the Muhammadan army.

Subsequently, as 'Abdu's-salám was moving his fleet from Srighát towards Hájó, he was attacked at night by the Ahom fleet which numbered 500 ships. Sattrajit took the first opportunity to retire with his fleet, and the Musalmáns were beaten. Bali Náráyana followed up this success by laying siege to Hájó, and after cutting off his supplies, forced 'Abdu's-salám to treat. The latter went with his brother to the hostile camp, where he was at once seized and sent off to Garhgáoñ.

remained at Hájó after prince Dányál's defeat, as Vísra Símhá was then rapidly rising to power. Besides, the *Fathayah* i *Tbrayah* says that the whole of that prince's army was killed or captured. (J. A. S. B. 1872, page 79)

* In Gunábhírám's *Adm. Buranj*, it is said that Bali Náráyana fixed his capital at Mañgaláí in Darrang, and ruled well.

The Musalmáns then tried to force their way through the enemy, but were all cut up in the attempt.

In the meantime, Parikshit's son Chandra Náráyaṇa, who had established himself with 6,000 or 7,000 Ahoms and Koches at Karaibári, was attacked by the troops left at Sríghát and forced to retreat to pargana Solmári. He was killed shortly afterwards. The Musalmáns then marched to Dhubrí where they found and arrested Sattrajit, who was subsequently executed for his treachery, and thence proceeded to Jogighopá, at which place as well as at Hirápur on the opposite bank of the Brahmaputra, Bali Náráyaṇa had erected strong fortifications, his fleet being anchored between the two forts. They were harassed on their way by the enemy's troops, but drove them off, and after several assaults, they forced Bali Náráyaṇa to retreat, and followed him across the Manás river. He retreated to Budhnagar where he threw up a strong entrenchment, but withdrew to Chothri on hearing that Muḥammad Zamán was marching against him with a strong detachment, under the guidance of Utama Náráyaṇa, the son of Sardárbar, Zamindár of Budhnagar, who was well acquainted with the country.

This detachment halted at Bishunpur for the rains, but was shortly afterwards attacked by Bali Náráyaṇa, who had received reinforcements which brought the strength of his army up to 40,000 men. He threw up fortifications at the Kalápáni river, about three miles from Bishunpur, behind which he encamped on a well-selected site, protected by rising ground, a river difficult to cross, and dense jungle. From this vantage ground he harassed the Musalmáns by repeated night attacks.

At the close of the rains, in spite of Bali Náráyaṇa's efforts to prevent it, a junction was effected between the detachment at Bishunpur and the main body of the Musalmán army, which had spent the rains at Chandankot. Having united their forces they attacked and defeated Bali Náráyaṇa, who fled to Darrang. A son of the Ahom king was taken prisoner in this battle and was put to death together with all the other prisoners. The Ahom forts at Páṇḍu and Sríghát were then taken together with 500 war sloops and 300 guns, and Koch Hájo again became a Musalmán province. Fort Kajlí (at the junction of the Kallang and the Brahmaputra) was also taken, and a detachment was sent to Darrang to hunt down Bali Náráyaṇa who fled to Siṅgiri, where he and his two sons shortly afterwards died. Gauháti was selected as the seat of Government of the Musalmán province, and a financial settlement of the country was effected.

As already stated, the final overthrow of Bali Náráyaṇa is said to have taken place in 1637 A. D. Strange to say no mention of this struggle is made in any local history.

DATES OF THE KINGS MENTIONED IN THE *VAṂŚĀVALI*.

Rājā Lakshmi Nārāyaṇa's *Vaṁśāvali* mentions only one date—that of the erection of the Kāmākhyā temple, and it is not very easy to fix the exact dates of the kings to whom it refers. Some dates are given in the *Vaṁśāvali* of Prasiddha Nārāyaṇa, in Guṇābhirām's *Asām Buranji*, in Buchanan Hamilton's account of Raṅgpur and elsewhere,* but these authorities often differ amongst themselves, and it is therefore necessary to examine the matter in some detail.

It will perhaps be easiest to arrive at the truth by dealing in the first instance with the dates of Rājā Nara Nārāyaṇa. Three different dates are assigned for the time when he ascended the throne in succession to his father Viśva Simha, viz., 1528 A. D. by Guṇābhirām, 1534 in Prasiddha Nārāyaṇa's *Vaṁśāvali*, and 1555 by Bābū Rām Chandra Ghosh.

His death is said to have occurred in 1584 A. D., and Prasiddha Nārāyaṇa's *Vaṁśāvali* and Guṇābhirām's *Asām Buranji* agree in fixing 1581 as the date of Raghu's accession to power in the eastern part of the old Koch kingdom, while the inscription in the Hayagrīva temple at Hājo, which was built during his reign and bears date 1583 A. D., helps to confirm this as the date of the division of the kingdom.

It is recorded in the *Akbarnāmah* that Lakshmi Nārāyaṇa who had then succeeded his father, made his submission to the Delhi Emperor and paid his respects to Raja Mān Singh in 1596 A. D. On the other hand, the Musalmān historians refer to Nara Nārāyaṇa as still reigning in 1578.† It is thus certain that Nara Nārāyaṇa died between 1573 and 1596 A. D. and we may therefore, I think, confidently accept 1584 as the approximate date of his death.‡

* I do not refer to the dates given in the manuscript copy of the Yogini Tantra in the possession of a Brāhman of Haulī Mohanpur, as it appears that they are not trustworthy, so far as these earlier kings are concerned. Prior to the accession of Mahendra Nārāyaṇa in 1660, only four dates are given, viz., the erection of Hājo and Kāmākhyā and the accessions of Viśva Singh and Raghu Deva. The two former, which could always be ascertained from the inscriptions in the temples themselves are correct, but the two latter—1495 A. D. and 1555 A. D. are obviously wrong. It seems probable that the collection of dates in this volume was not commenced until long after the time of these two kings, and that when it was undertaken, their dates were filled in by guess work.

† Blochmann, J. A. S. B. 1872, page 53.

‡ Blochmann, J. A. S. B. 1875, page 306. The name of the ruler mentioned in the Musalmān account is Bāl Gosaiṇ, but this is clearly only another name for Nara Nārāyaṇa. Blochmann says that Bāl Gosaiṇ was the son of Nara Nārāyaṇa and father of Lakshmi Nārāyaṇa, but this must be a mistake, as neither in the very full account contained in the *Vaṁśāvali* nor in any other local narrative, is mention made of any

It is less easy to come to a definite conclusion regarding the date of his accession. According to the *Vamsāvali* of Prasiddha Nārāyaṇa, this took place in 1534; Guṇābhirām following Bīśveśvar places it in 1528 and Bābū Rām Chandra Ghosh in 1555 A. D.* The last mentioned date may be at once rejected, on the testimony of a silver coin of this king which was found some years ago in the Gāro Hills and published in the J. A. S. B. for 1875, page 306.† This coin is dated 1477 S'ak (1555 A. D.), or the very year fixed for Nara Nārāyaṇa's accession by Bābū Rām Chandra, and as he had to fight with his brother Nara Simha before obtaining the throne, it is extremely unlikely that he began to issue coins in the very first year of his reign. It is much more likely that the time when this money was coined, formed the second period in his reign, namely, the interval of peace which followed his earlier expeditions and preceded the second war against the ruler of Gauṛ.

Perhaps the best way of arriving at the probable date of his succession will be to calculate it from several independent data, and then to strike an average. The *Akbar-nāmah* says that his son was born when he was fifty years of age. As the latter ascended the throne on his father's death without, it would appear, the help of guardians, he cannot at that time have been less than 15 years of age. On this calculation Nara Nārāyaṇa must have been born in 1519 A. D., and as he was still a student when his father died, he cannot at that time have been much more than 15 years of age. This would bring his accession to 1534 A. D., which is the very date mentioned in Prasiddha Nārāyaṇa's *Vamsāvali*.

Another way of arriving at the probable date of his succession is by calculating what time would be required for the different events referred to in the history of his reign, which occurred prior to the erection of Kāmākhyā temple, the date of which (1565 A. D.) is known to us by the inscription in the temple itself and by the concurrent testimony of Prasiddha Nārāyaṇa's *Vamsāvali*, and the manuscript edition

ruler between Nara Nārāyaṇa and Lakshmi, and all alike agree in saying that the latter was the son of the former. Besides Blochmann says that the brother of Bāl Gosaiṇ was Śukl Gosaiṇ, who can be none other than Śukladhvaja. In his notice of the *Akbar-nāmah* (J. A. S. B. 1872, page 52) he quotes a passage which says that Bāl Gosaiṇ lived the life of an ascetic and did not marry until he was 50 years old, when he took a wife by whom he had a son named Lakshmi Nārāyaṇa. Lastly, on page 100 of the number of the *Journal* just quoted, Blochmann himself, in a footnote, explains that Nara Nārāyaṇa is called Bāl Gosaiṇ in the *Akbar-nāmah*.

* Statistical Account of Koch Bihār, page 407.

† A similar coin of Nara Nārāyaṇa bearing the same date had been previously published in J. A. S. B. 1866, page 547, by Rajendralāle Mitra.

of the Yogai Tākura in the possession of the Brāhmaṇ of Hanli Mohanpur.

Briefly these events are :—

- (1.) Expulsion and pursuit of Nara Siṃha.
- (2.) Construction of Gosuñ Kamala Ali. This is said to have taken a year to make, but the real time it took was probably considerably longer.
- (3.) Invasion of the Ahom kingdom. The Ahom chronicles mention at least two expeditions, and the *Vamsāvali* relates that Nara Nārāyaṇa remained a year at Garhgañ before the Ahom king submitted.
- (4.) Conquest of Hiramba or Cachar.
- (5.) War with the king of Jaintiā.
- (6.) War with the king of Tipperah.
- (7.) War with the king of Dimarā.
- (8.) War with the king of Sylhet.
- (9.) War with the ruler of Gaur.
- (10.) Silarāi's detention at Gaur.
- (11.) Erection of Kāmākhyā According to the *Vamsāvali* this was carried out in six months, but other accounts say that the temple took ten years to build.

It is difficult to arrive at any exact conclusion as to the time which these events occupied, but bearing in mind the difficulties of locomotion at that time, and the fact that between each war it would probably be necessary for the Rājā to spend some time attending to the internal affairs of his kingdom and consolidating his rule, I do not think it would be safe to allow a smaller period than 30 years for these occurrences. Deducting this period from the date of the erection of Kāmākhyā, we get 1535 A. D., as the date of his accession, which is again very nearly the date quoted in Prāsiddha Nārāyaṇa's *Vamsāvali*. On the other hand, the Ahom chronicles fix 1562 as the date of his invasion of their country, and as this is one of the earliest events of his reign as recorded in the *Purushandamah*, it would seem that his reign could not have commenced long before that date. As, however, it is certain that Kāmākhyā was rebuilt in 1565, and all the intervening events could not possibly have occurred within the short space of three years, it is clear either that this date is incorrect or else that the *Vamsāvali* does not record events in their historical sequence. On the whole the weight of the evidence seems to show that Nara Nārāyaṇa came to the throne in 1534 A. D., or soon afterwards.

The same dates, of course, represent the conclusion of Viśva
 " Viśva Siṃha's dates. Siṃha's reign. As regards its commencement,
 it will be remembered that Nāmbāra was over-

thrown by Husain Shāh in 1498 A. D., and that afterwards Chandana and Madana reigned for a few years at Marálávāsa, a place some 20 miles north of Kamāthapura. If, therefore, Chandana and Madana ruled the whole of the country formerly under the sway of the Khyen Rājās, it would be impossible for Viśva Simha to have begun to rule before 1515–1520 A. D. It has, however, already been shown that after the fall of Nilāmbar, there was no ruler of the whole kingdom, but that many petty chiefs exercised supreme power in different parts of the country. This being so, there is no reason why Viśva Simha should not have begun to rule some portion of the country while Chandana and Madana still held sway at Marálávāsa. Buchanan Hamilton says that “the Bihār Rājās reckon by the era of their ancestor, Viśva, whom they suppose began to govern in the Bengal year 916 or 1509 A. D.,” and as this, on the date arrived at for Nara Nārāyaṇa’s accession, would give him a reign of 25 years, there seems to be no reason for discrediting the date thus assigned for Viśva Simha’s accession. We have seen that this prince gradually rose from the position of one of many petty chiefs to be ruler of the whole country from Rangpur to Kāmarūpa, and that he eventually found himself strong enough to march against the Ahom king in Upper Assam. It is very unlikely he could have effected all this in a shorter time than that allowed him according to the above calculation. Finally Lakshmi Nārāyaṇa’s *Vamśāvali* mentions 25 years as the duration of his reign, and this is exactly the period intervening between 1509, the date of his accession according to the Koch era, and 1534, the date of his death according to Prasiddha Nārāyaṇa’s *Vamśāvali*.

Turning now to the kings who succeeded Nara Nārāyaṇa, it has already been shown that Raghu Deva probably became king of the country east of the San-kosh in 1581 A. D. Guṇābhīram and Prasiddha Nārāyaṇa’s *Vamśāvali* agree in saying that his death took place in 1593 A. D., and we know from the *Pādishāhnāmah* that Parikshit was ruling when Jahāngīr came to the throne in 1605. We may, therefore, accept 1593 as the approximate date of Raghu’s death.

According to Guṇābhīram, Parikshit died in 1606 A. D. at Patna. The *Pādishāhnāmah*, however, places his defeat by Mukarram Khān in 1613–14, so that according to this account, his death must have taken place about 1614 or 1615 A. D.

Bali Nārāyaṇa, who succeeded Parikshit, is said by Guṇābhīram to have died in 1634 A. D.,* but it appears from the account given in the *Pādishāhnāmah* that

Bali Nārāyaṇa’s dates.

* The same date is given in Prasiddha Nārāyaṇa’s *Vamśāvali*.

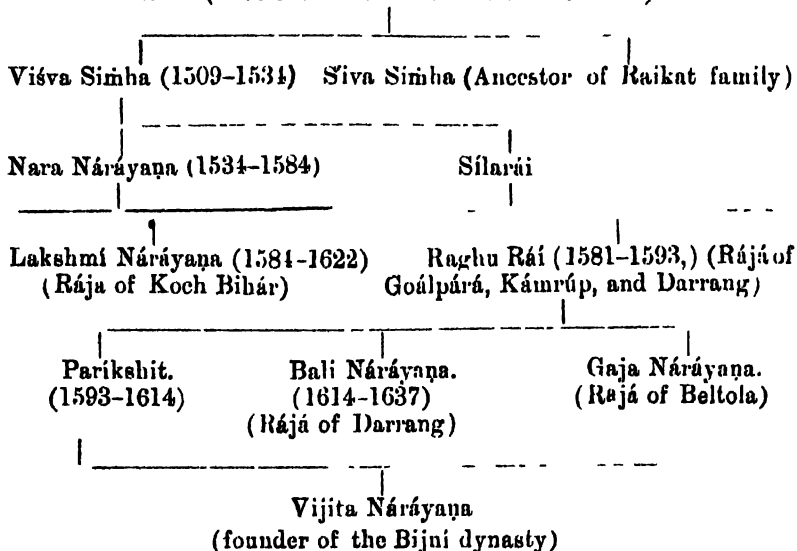
this is too early. According to this authority his death took place in 1637.

Regarding Lakshmi Náráyana, who succeeded his father in the western portion of the Koch kingdom in 1584 A. D., we know from Musalman sources that he was still reigning in 1618. Babu Rám Chandra Ghosh says that he died in 1622 A. D.

The dates of these earlier Koch Kings appear therefore, to be approximately those shown in the following genealogical tree.

Summary.

HAJO (PROGENITOR OF KOCH RAJAS).



SUBSEQUENT HISTORY OF THE KOCH RAJAS.

The subsequent history of the descendants of Lakshmi Náráyana will be found in Hunter's Statistical Account of Koch Bihár family. Koch Bihár, pages 409-426, and the only additional information of any importance of which I am aware, is that contained in the extracts from the *Fatḥiyah i Tbriyah* which were published by Blochmann in the J. A. S. B. for 1872, pages 63-69. From these extracts it appears that in 1558 A. D., during the wars for the succession to the Delhi throne, Rájá Bhíma Náráyana took advantage of the disturbed state of the country to make raids into Ghoraghat and attempted to recover Kámarúpa. In the latter endeavour he was thwarted by Jayadhvaja Simha, the Ahom king, who had also sent an army into Kámarúpa. When Mir Jumla became governor of Bengal, he at

once took steps to punish Bhíma Náráyaṇa and Jayadhyaja Simha and to recover the lost territory. He began by invading Koch Bihár. Bhíma Náráyaṇa, asked for pardon, but Mír Jumla refused to accept his excuses, and in November 1661, he started from Jahángírnagar with his army. Bhíma Náráyaṇa had fortified the road *via* the Yak Duár, and also the Khunṭaghát road, which passed by Rángamáṭi, but had neglected to protect a third which ran through the Moraṅ country. By this road, therefore, Mír Jumla advanced. The Rájá fled to the Bhotán hills, and the greater part of his baggage and guns and other munitions of war was captured by Mír Jumla's army. The latter sent to the Dharma Rájá of Bhotán, requesting him to deliver up Bhíma Náráyaṇa, but this the Deva Rájá refused to do. Being pressed for time, Mír Jumla did not stay to enforce his request, but proceeded to carry out his projected invasion of Assam.

The Koch King is described in the *Faṭḥiyah i 'Ibriyah* as being noble and mighty and fond of company. He was a great wine-bibber, and was so addicted to the pleasures of his harem, that he neglected to look after his kingdom. He had a magnificent palace. There were flower beds in the streets, which were lined on each side with rows of trees. The weapons of the people were swords, firelocks and poisoned arrows.

This invasion by Mír Jumla is not mentioned in the account given by Hunter. Moreover, the name of the king at the time in question is said by him to be Práṇa Náráyaṇa who came to the throne in 1627 and died in 1666 A. D.

The omission to refer to the invasion may be explained by the fact that it left no permanent effect. Mír Jumla advanced, and the king retreated without giving battle, and apparently returned again to his capital as soon as Mír Jumla vacated it. The discrepancy in the matter of names is also of very little importance. The character of the king as portrayed by Hunter agrees closely with that given in the *Faṭḥiyah i 'Ibriyah*; we know that Viśva Simha, Nara Náráyaṇa, Śil-arái and others of the family bore each two different names, and there is thus no reason why Práṇa Náráyaṇa should not also have been known as Bhíma Náráyaṇa.

After Parikshit's defeat, his son Vijita Náráyaṇa was confirmed by

the Musalmáns as Zamíndár of the country
between the Manás and the Sankosh.

Bijni Family. He settled at Bijni and is the ancestor of the existing Bijni family. Under the auspices of this family, a small pamphlet was issued, some years ago, giving an account of Vijita's successors, but as they were not independent princes, there would be little use in dwelling on their history. It may,

however, be interesting to note the present status of the family and the manner in which it was created.* Under Mughal rule, the Rájá paid an annual tribute of Rs. 5,998, which was afterwards commuted to an annual delivery of 68 elephants. The Názim used to make up for short deliveries by sending a *Sazidai* into the Rájá's estates and levying the balance due by force, but when the East India Company came into possession of Bengal, this method of recovering outstanding payments was abandoned, and during the years 1776–1787 A. D., only 90 elephants were received out of the 816 which should have been supplied. The contribution of elephants was again changed for a money payment in 1788, the amount fixed being Rs. 2,000. Two years later the Rájá agreed to pay another thousand rupees a year, but this offer was declined by the Governor-General, on the ground that the chance of losing the attachment of a Zamundár in possession of a border estate should not be risked for the sake of Rs. 1,000. Subsequently a deduction of Rs. 850 from his annual payment was allowed as compensation for the abolition of *sayar*, so that the family now pay a total revenue of only Rs. 1,150, for an estate, the annual collections from which amount to very nearly two lakhs of rupees †

In Darrang, Bali Náráyana was succeeded by Mahendira Narayana, who is said to have made large grants of *Brakmottai* land to Brahmans. He died in 1643 A. D., and was succeeded by his son Chandira Náráyana, who died in 1680, and was followed by his son Súrya Náráyana. This prince is said to have been worsted in battle by Manzúr Khan in 1682, and taken captive to Delhi.‡ He escaped, but declined to resume his place as

* This information is extracted from a note by Mr. Forbes in 1875, on certain bundles of paper received from the Board of Revenue.

† It has been argued that the estate has never been permanently settled, that the payment is of the nature of a tribute and not an assessment, and that as Bijur is no longer a border estate, the reason for an unduly low assessment no longer exists. But this is a matter with which we are not at present concerned.

‡ According to Gnnabhirám Prasadha Náráyana's *Famádrali* says, that Mansúm Khán was the name of the Musalman leader, and fixes 1675 as the date of the occurrence. The manuscript *Yogini Tantra* on the other hand, says that it took place in 1709 A. D. No mention is made of the matter by Musalman historians, and even the name of the Muhammadan leader does not appear in their accounts of events in Kámráp. I have not mentioned Mir Jumla's invasion, which took place during this prince's reign, as that invasion was directed against the Khomsa, and there is no record of any conflict between Súrya Náráyana and the Musalmáns. The only reference to this king in the *Fáikiyah* : *Ibriyah* is the following.—“At this time Makar dhvaj, Rájá of Darrang, who is subject to the Rájá of Assam, came and paid his respects to the Nawáb (at Gauhati), presented an elephant, received a *Khat*, was promised protection, and was ordered to travel with the army.”

Rájá.* He was succeeded by his brother Indra Náráyana, who was at that time only five years old. During his minority, the Ahoms took advantage of dissensions amongst his councillors to strengthen their hold on the country. Darraung alone remained in his possession, and even for this he had to pay an annual tribute. During his reign, Darraung is said to have been surveyed under the orders of the Ahom Rájá, presumably with the object of ascertaining the amount of tribute which Indra Náráyana would be able to pay.† When his son Aditya Náráyana succeeded him in 1725, the kingdom consisted only of that portion of the present sub-division of Maṅgaldái, which lies south of the Gosaiñ Kamala Ali, and three years later, the greater part of this small vestige of the heritage of his ancestors was wrested from him by his younger brother, Madhu Náráyana, who took also one of the two family idols.‡ From this time, the family sank into comparative insignificance. They were now mere subordinates of the Ahoms, and exercised no powers except such as were conferred on them by the Ahom prince.

Later on, their position was still further reduced, and instead of being tributaries, they were simply agents for the Ahom King, and in return for managing Deś Darraung were allowed the lands which were cultivated by their personal slaves and servants, which were surveyed, and carefully recorded in the state records of the Ahoms.§ When the English came into possession of the country they were allowed to retain these lands subject to the payment of half the usual revenue on the area under cultivation, so long as they themselves remained in possession. On alienation of any of these lands, however, the privilege of paying at half rates is withdrawn, and an assessment at full rates introduced. The existing representatives of the family still hold most of the land originally granted to them, but owing to their bad management and extravagant habits, they are now reduced to a condition of comparative poverty.

* In Prasiddha Náráyana's *Famśirali*, it is said that he was detained in Bengal for 50 years and only returned to Assam in 1725 A. D., where he died ten years afterwards.

† According to the manuscript *Yoginí Tantra* this survey took place in 1707 A. D., and was carried out by one Dhanirāma.

‡ These are the Durgá or Buri Gosainí and Siva or Burá Gosaiñ. The gold ornaments of these two idols were stolen within a few months of each other, some seven years ago.

§ Report on the Darraung district by Captain Mathie, Principal Assistant, dated 15th February. 1835.

Bijapur Inscription of Dharala of Hastikundi of the Vikrama year 1053.
(From the materials supplied by Munshi Deviprasád).-- By PROFESSOR
F. KIELHORN, C. I. E., GÖTTINGEN.

This inscription was discovered, more than fifty years ago, by Captain Burt, from whose rubbing fragments of the text and what professes to be a literal translation were published in Vol. X. pp. 819-821 of the Society's *Journal*. The account, there given of its contents, is however quite worthless, and it is therefore fortunate that this document has lately been again brought to public notice by Munshi Deviprasád of Jodhpur, a gentleman who takes great interest in the history and antiquities of his country. Munshi Deviprasád, in 1891, furnished the Society with an account of it which will be found in the *Proceedings* for 1892, pp. 2-3; and he has more recently sent in a fuller paper on the same subject, as well as an ink-rubbing of the inscription. These materials have been forwarded to me by the Philological Secretary, with the request that I should publish the text of the inscription. Although the rubbing sent to me does not enable me to do this as it ought to be done, I have great pleasure in giving here, after revision, the substance of Munshi Deviprasád's notes, together with some extracts from the Sanskrit text; and I trust that by doing so I may induce those who have access to the original inscription to furnish either myself or some other scholar with carefully made impressions of it.

According to local report the stone which bears this inscription was originally fixed* near the entrance of a solitary Jaina temple which stands about two miles south of the village of BIJAPUR in the Bali-Godvár District of Márwár, among or close to the remains of the old town of HATONPI, the HASTIKUNPI or HASTIKUNPIKÁ of this inscription. From there it is said to have been removed, some years ago, to the Dharmśálá of the Jaina community of Bijapur, where it was seen in 1889 by Mr. Joshi Aidán, Inspector of the Historical Department of Márwár. That officer brought it to the notice of Munshi Deviprasád, and it is now probably at Jodhpur, having been made over to the charge of the Historical Department of Márwár.

The inscription contains 32 lines of writing which cover a space of about 2'8½" broad by 1'4" high. Near the proper right margin, all the way down, the writing has suffered a good deal, apparently from exposure to the weather; but otherwise the inscription is in a very fair state of preservation, and I have no doubt that, with a good

* Captain Burt found the inscription "in the interior of a gateway leading to Mandir, distant one kos from Beejapoor, on the route from Odeypore to Sirohee near Mount Abou." See this *Journal*, Vol. X. p. 821.

impression, nearly the whole of the text may be made out with certainty. The size of the letters is about $\frac{3}{8}$ ". The characters are Nāgarī, they closely resemble, but look more modern than those of the Harsha inscription* of Vīṅḍharāja of the Vikrama year 1030. The language is Sanskrit, and nearly the whole is in verse. Throughout, the inscription has been written and engraved with great care, and in respect of orthography it need only be stated that the letter *b* has generally (not always) been denoted by the sign for *v*, and that the dental and palatal sibilants have sometimes been confounded.

The inscription divides itself into two parts. The first part is a *Prasasti* of 41 verses which was composed by SŪRYĀCHĀRYA (line 21), and which is dated (in lines 19 and 22) in the year 1053, on the 13th of the bright half of Māgha, a Sunday, under the *nakshatra* Pushya,—corresponding, for the expired Vikrama year 1053, to Sunday the 24th January A. D. 997, when the 13th *tithi* of the bright half ended 7 h. 5 m., and when the moon was in the *nakshatra* Pushya up to 21 h. 40 m. after mean sunrise. The proper object of this *Prasasti* is, to record the consecration by the Jaina sage ŚĀNTIBHADRA or ŚĀNTYĀCHĀRYA, who during the reign of a certain DHAVALA lived at that prince's capital HASTIKUṆḍĪ or HASTIKUṆḍĪKĀ of an image of the Tīrthamkāra Rishabhānāthadeva, at a temple that had been founded at Hastikuṇḍī by Dhavala's grandfather VIDAGDHA. But, as is usual in such cases, what is more valuable to us is the genealogy of the prince Dhavala which is given by way of introduction in lines 2–6, and which contains some interesting references to princes who (with perhaps one exception) are known to us from other inscriptions. This genealogical part of the *Prasasti* will be considered below.

The second part of the inscription, from line 23 to 32, is really quite an independent inscription, added on to the preceding *Prasasti* because it records endowments that were made in favour of the same Jaina temple, or of a sage connected with it, by the father and grandfather of the prince Dhavala, mentioned above. This second inscription also (in line 23) opens with some verses on the genealogy of the rulers of HASTIKUṆḍĪ. First there was a prince HARIVARMAN. From him sprang the prince VIDAGDHA who was 'a tree yielding every desire in the garden which was the illustrious RĀSHṬRAKŪṬA race.' And his son again was the illustrious MAHMATA. The inscription then records that, in the Vikrama year 973, VIDAGDHA made some donations in favour of a sage named BALABHADRA, and that these gifts were largely added to by the prince MAHMATA in the Vikrama year 996.

From the second inscription we learn, then, that the chiefs of

* See *Epi-graphia Indica*, Vol. II. p. 120, plate.

HASTIKUNPI here enulogized, belonged to the RĀSHṬRAKŪṬA family, and that VIDAGDHA, the son of HARIVARMAN, was ruling in Vikrama-saṁvat 973, and his son MAṆMAṬA in Vikrama-saṁvat 996. According to the first inscription, which in verses 4-8 mentions the same princes, Maṇmaṭa was succeeded by his son DHAVALA who was alive in Vikrama-saṁvat 1053, but had then made over the government to his son BĀLA-PRASĀDA. Of Harivarman, Vidagdha and Maṇmaṭa the first inscription says nothing of importance. Of DHAVALA, whose reign fell in the first half of the 11th century of the Vikrama era, verses 10-12 record certain dealings which he had with the princes MUÑJARĀJA, DURLABHARĀJA, MŪLARĀJA and DHARAṆĪVARĀHA, though, what these dealings were, is owing to the damaged state of the inscription, not in every case quite clear. From the first half of verse 10 it appears that MUÑJARĀJA, who must be taken to be VĀKPATI-MUÑJA of MĀLAVA for whom we have dates of the Vikrama years 1031, 1036 and 1050, invaded MEDAPĀṬA (or Mewād), and the second half of the verse probably stated that the ruler of that country on that occasion was either supported or sheltered by Dhavala. Similarly verse 11 seems to record that Dhavala assisted a prince, whose name may have been MAHENDRA or MAHĪNDRA, against a prince DURLABHARĀJA, who probably was the brother of the CHĀHAMĀNA VIGRAHARĀJA of the Harsha inscription. And verse 12, again, states that Dhavala also supported DHARAṆĪVARĀHA, when that prince was attacked by MŪLARĀJA. That this last-mentioned prince was the CHALUKYA MŪLARĀJA I, whose latest known inscription is dated in Vikrama-saṁvat 1051, is clear; his opponent DHARAṆĪVARĀHA might perhaps be conjectured to have been one of the Chūḍāsama chiefs,* but, before trying to identify him, it will be better to wait till his name is found in other records.

EXTRACTS FROM THE TEXT

L. 2. महीश्वता ॥ ३ [॥^x]

अभिवि(वि)भ्रमुषिं कातां सावित्रीं चतुराणनः ।

हरिवर्मा व(व)भूवाच भुविमुर्मुवगाधिकः ॥ [३ ॥^x]

सकलजोकविकोक(व)नयंकनसुरदनमुदवा(वा)कदिवाकरः ।

रिपुवधूवदनेदुहृतमुतिः

* See *Indian Antiquary*, Vol XII. p. 192.

3.

[समुद ?] पादि विदग्धप[स्ततः ॥ ?] [॥ ×]

— — — — —

— — नीतो दि ० ० ० [क]रित्रीरजन्माकरो वा [॥ ×]

पूर्व जैनं नि[ज]मिव यश्चो — ० — द्रस्तिकुंषां

रभ्यं हर्ष्यं गुह हिमगिरेः शृङ्गशृङ्गारहारि ॥ ६ [॥ ×]

दानेन तुलितव(व)लिना तुलादिदानस्य येन [दिवा]य ।

भाग[ह]यं व्यतीर्यत भागश्च

4.

. र्याय ॥ [७ ॥ ×]

तस्माद ममटा ० — ० — ।

. स्नाघं ० — ० — ० ॥ [॥ ×]

तस्मादसमः समजनि स[मस्तजनि]जगितलोचनागं [दः] ।

धवलो वसुधाव्यापी चंद्रादिव चंद्रिकागिकरः ॥ [६ ॥ ×]

भङ्गाघाटं घटाभिः प्रकटमिव मदं मेदपाटे भटा[गं]

जन्ये राजन्य-

5.

[ज ?]न्ये जनयति जन[ता]-रयं मुंजरजे ।

श्री — — — ० [यार्थं] हरिण इव भिया — ० — — ० — —

— — — — — शरयो ० ० ० ० ० ० — यः सुराणां व(व)भूव ॥ [१० ॥ ×]

श्रीमदुर्लभराजभूषजि भुजैर्भुजयभंगां सुवं

दंडैर्भङ्गनसौ(श्री)यष्टचंडसुमटैस्तस्याभिभूतं विभुः ।

यो दैत्यैरिव तारका-

6.

[प्र]भृतिभिः श्री[मन्महेन्द्र ?] [पुत्रा]

सेनानी[रिव] नीतिपौरुषपरोनैवीत्यरां निर्द्वितिं ॥ [११ ॥ ×]

[यं ?] मूलादुद[मू]लज[हु]ब ० — : श्रीमूलराजो नृपो

दर्यांधो धरणीवराहदपतिं यद्वि[हि]पः पादपं ।

आयातं सुवि कांदिश्रीकमभिको यस्तं शरयो द[श्री]

दंष्ट्रायामिव कूटमूढमहिमा कोजो महोमंडलं ॥ [१२ ॥ ×]

10. [सु]वर्तव्यं राज्ञे वा[च]सोदमेतिष्ठि-
त्यखितवया निःसंगो यो व(व)भूव सुधीः स्वयं ।
कृतयुगकृतं कृत्वा कृत्यं कृतात्मचमत्कृतौ-
रुद्धत सुकृतौ नो कालुष्यं करोति कलिः सतां ॥ [१२ ॥ x]
- 11 राजधानी सुवो भर्तुस्तस्यास्ते इत्तिकुंडिका ।
अलका धनदस्येव धनाज्जनसेविता ॥ [२२ ॥ x]
14. अस्यां स्वरिः सुराणां गुबरिव गुबभिर्गौरवार्हो गुणौघै-
भूपाणानां त्रिलोकौवल्यविल-
- 15 [सिता?]नंतरानंतकौर्त्तिः ।
नाम्ना श्रीशान्तिभद्रो[भव]दभिभवि[तुं] भासमाना[च]माना-
कामं कामं ∪ — — जनितजन ∪ — संपदा [य]स्य मूर्त्तिः ॥ [२६ ॥ x]
- 19 शान्ताचार्यैस्त्रिपंचाशसहस्रे श्ररदामियं ।
माघशुक्लत्रयोदश्यां सुप्रतिष्ठे प्रतिष्ठिता ॥ ३८ ॥ x]
- 22 संवत् १०५३ माघशुक्ल १३ रविदिने पुष्यनक्षत्रे श्रीरिषभनाथदेवस्य*
प्रतिष्ठा कृता महाध्वजचरोपितः ॥
- 23 आसीद्धौघनसंमतः शुभगुणो आस्त्यतापोज्ज(ज्ज)लो
विस्फोटप्रतिभः प्रभावकानितो भूयोत्तमांगार्धितः ।
येषि[त्तो ?]—
24. ∪ ∪ — ∪ — ∪ ∪ ∪ — भिर्धंगसंज्ञानितो
यः श्रीमान्दरिद्रो[?] [च]तममणिः सर्वशृङ्गारे गुरौ ॥

* Read शुभशुभ .

† I believe that this is the actual (though incorrect) reading.

तस्माद्(द्)भूव सुवि भूरिगुणो ८ — —

भूपप्रभूतमुकुटार्चितपादपौठः ।

ओराङ्गकूटकुलकाननकल्पदृष्टः

ओमाग्विदग्धनृपतिः प्रकटप्रतापः ॥

तस्माद्(द्) ८

25.

८ — ८ — ८ ८ ८ — — तः परं भाजनं

संभूतः शु(सु,तनुः सुतोतिमतिमान्* ओमंमटो विभूतः ।

येनास्मिन्निजराजवंशगगने चंद्रायितं [चावया]

तेनेदं पिष्टशासनं समधिकं कृत्वा पुनः पाव्यते ॥

ओवलभद्राचार्यं विदग्धनृपपूजितं समभ्यर्च्य ।

आचंद्रार्कं यावद्दत्तं भवते म . . . [॥]

30.

रामगिरिगंदकलिते विक्रमकाले गते तु शुचिमा[सि ।]

31

[ओम]द्(द्)लभद्रगुरोर्विदग्धराजेन दत्तमिदं ॥

नवसु शतेषु गतेषु तु वसुवतीसमधिकेषु माघस्य ।

छायाकादश्यामिह समर्पितं म]मटनृपेन(ण) ॥

32.

इदं चाक्षयधर्मसाधनं शासनं ओविदग्ध[नृप?]दत्तं संवत् ६७३

ओमंमटरा[ज] संवत् ६६६ ॥

* Read •माञ्ची•

The Site of Karna Suvarṇa.—By H. BEVERIDGE, B. C. S. (RETIRED).

Hiuen Tsiang, the Buddhist pilgrim, visited a town in Bengal which is spelt in Chinese, Kie-la-na-su-fa-la-na. M. Stanislaus Julien transliterates* this into the Sanscrit words *Karna Suvarṇa*, which may mean Karna the Golden, or Golden Ear, or simply, wearing gold earrings.† So far as I am aware, the site has not yet been satisfactorily identified, although it has been conjectured, chiefly from the similarity of name, that it lay on the Suvarṇa Rekḥá, or Streak of Gold, a river which traverses Midnapur, and used to be the boundary between Bengal and Orissa. Some have placed it in Birbhúm, and some in Singhbhúm; and quite recently Dr. Waddell,‡ has suggested that it lay close to Buidwan and is the place now known as Kañchanagar. My chief object in this paper is to show that Karna Suvarṇa is probably identical with Raṅgamāṭi, in the Murahidábád district, and situated on the right bank of the Bhágíraṭhí, about six miles below Berhampur. But before I discuss this point, I am obliged to say a few words about the records of Hiuen Tsiang's travels.

It is well known that we have two accounts of his journeying. One is called the Si-yu-ki, or Descriptions of Western Countries, the other is his biography by Hwui-li and Yen-Tsung. The Si-yu-ki is in twelve books, and is regarded as the original and more authoritative account. It was not, however, entirely drawn up by Hiuen Tsiang. He gave the materials, but the composition is by one Pien-ki. M. Julien conjectures that Hiuen Tsiang's absence from China for seventeen years had made it difficult for him to write his mother tongue with the elegance required by Chinese officialism, and so the task was assigned to another monk. The biography is in ten books, and is mainly the work of Hwui-li. Both he and his continuator were contemporaries of Hiuen Tsiang, and as M. Julien remarks, their work is the livelier and more interesting of the two. It is also, I understand, written with greater elegance. That it is more interesting can easily be understood, for it is a biography and a record of Hiuen Tsiang's adventures; whereas the Si-yu-ki is a sort of *gazetteer* or treatise on geography. It is necessary to give these details because there is a remarkable discrepancy between the two records about the route by which Hiuen Tsiang reached Karna Suvarṇa, and it is desirable to decide which account should have the preference.

* III. 84. Beal's translation, II, 201.

† II. 248n. At 250 l. c. the Chinese translation Kin-enl is used.

‡ See note at end of this paper.

The following two tables of routes show where the discrepancy lies:—

Places.	Direction and distance, in miles.			Remarks.
<i>Route according to the Si-yu-ki.</i>				
Champá		I have reckoned the <i>li</i> as one-fifth of a mile, though it is a little more. Champá is Bhágulpur Kajúghíra, or Kajingara, has not been identified. Lassen points out that according to the biography, (I. 237,*) it lay partly at least, N. of the Ganges, though according to both the routes it lay on the W. bank. It is perhaps the Kajuráhi, or Kharjura-bhága (Sachin I. 202), of Albirúni, which he puts as 80 <i>farsákh</i> east of Kanauj. Sir A. Cunningham suggests Kánkjol, but the resemblance is only in position. M. Saint Martin suggests the Cudjiry or Kajirí in Rennel's map (No. 15 of Atlas), near Farukhábád, and opposite Gaup. The first part of the word may be connected with <i>khajur</i> , a date tree. In going to Paundra Vardhana, Hiuen Tsiang crossed the Ganges from west to east. In all probability Mr. Westmacott's suggestion that the place is Panduá, in Maldah, is correct. There is a river in this neighbourhood, and also according to Rennel, a town, called Purnabhába, which sounds like Paundra Vardhana. On his way to Kámrúp, Hiuen Tsiang crossed a great river. This should be the Brahmaputra, but it is curious that he does not name it. The mention of Náráyan as the ancestor of the royal family, seems to indicate that the place visited was Koch Bihár and not Assam proper. Samatata (level shore) is the Ganges delta. The two routes agree as far as Paundra Vardhana. The direct distance from Paundra to Raṅgamatí is about 75 miles. The direction is nearly due south, but if, as seems probable, Hiuen Tsiang started from the monastery of Váchpa (? Váśibhá) (I. 180 and III. 75)† 24 <i>li</i> to the west, then the direction of Raṅgamatí would be S. S. E. The delta is E S E. from Raṅgamatí, and the direct distance about 180 miles. The direct distance from the seaface of the delta to Tamluk is about the same. The capital of Samatata is not known, but if Saśáka was a descendant of Adisú, it might be Dacca or Sonárgáo. Samatata extended to the sea shore, but as it was bounded on N. E. by Sylhet (I. 182 and III. 82), it must have extended inland as far as Dacca.
Kajúghíra	...	E. 80	...	
Paundra Vardhana	E	120	...	
Kámrúp	..	E. 180	...	
Samatata		S. 260	.	
Tamluk	...	W. 180		
Kārṇa Suvārṇa	..	N. W. 140	...	
Oriasa	...	S. W. 140	..	
<i>Route according to the Biography.</i>				
Paundra Vardhana		...		
Kārṇa Suvārṇa	...	S. E. 140	...	
Samatata	...	S. E. Not given		
Tamluk	...	W. 183	...	
Oriasa	...	S. W. Not given		

* Beal's translation, p. 131.

† Beal's Si-yu-ki, II, 196; Life, 181.

It will be seen that the Si-yu-ki makes Hiuen Tsiang diverge into Kámrúp (Assam) and arrive at Karna Suvarṇa from Tamluk. But the biography makes no mention here of the Assam visit, and brings Hiuen Tsiang direct from Paṇḍra Vardhana, or from Váchpá (? Vásibhá) to Karna Suvarṇa. M. Vivien de Saint Martin has pointed out the discrepancy in the note appended to M. Julien's third volume (p. 389). His idea is that the Si-yu-ki version should be unhesitatingly preferred because it is the primary account, and because it is more complete and consistent than that of Hwui-li.* But, as we have seen, neither account is exactly primary, and perhaps too M. Saint Martin has overlooked the difference in the character of the two works. The Si-yu-ki is a geographical treatise, and so all the information about each country is put in one place, whether the traveller visited it once or twice. For a similar reason, the order of visiting was, perhaps, not always exactly observed, though I have not found another instance of this. The biography on the other hand, joins the various journeys as they occurred. For instance, it describes Hiuen Tsiang as twice visiting Magadha or South Bihār; once on his way to Bengal and again on his return from Southern India, and after he had visited Gujrát, Sindh, and Mathurá. But the Si-yu-ki says nothing about the second visit. It also contains accounts of twenty-eight countries† which Hiuen Tsiang did not visit. It is therefore much less of a personal narrative than the biography is. The latter contains (Book V.) a detailed account of the Assam visit and of what had led to it. But it represents it as occurring after the second visit to Magadha, and it seems likely that Hiuen Tsiang went direct from Magadha to Assam, both because it was the shortest route, and because it was when he was at Nálanda that the Ambassadors from Kámrúp came to him. It was there, too, that Śilabhadra urged his compliance with the invitation. Dr. Fergusson (J. R. A. S. VI. 252,) has also noticed the discrepancy between the two accounts. He believes that Hwui-li is more correct about the date and manner of the visit to Assam, but still he holds that he is wrong about the journey to Karna Suvarṇa!

There can be no question that the route through Bengal given in the biography is the more natural one of the two. It brings the traveller down to the delta along the course of the Ganges (in those days the Bhágíratí was probably the main stream), and then takes him west and south *via* Tamluk and Orissa. The Si-yu-ki on the other hand,

* At p. 385, l. c. M. Saint Martin in noticing another discrepancy between the two accounts gives the preference to the itinerary in the biography.

† The Si-yu-ki describes 138 countries, but Hiuen Tsiang only visited 110. Saint Martin, I. App.

makes Hiuen Tsiang diverge to the north-east,* or Pauṇḍra Vardhana, and also causes him to describe two sides of a nearly equilateral triangle, between Tamluk and Orissa. This may be seen from M. Saint Martin's map where, however, the route is made still more awkward by his supposition that Pauṇḍra Vardhana is Burdwan. This it cannot be, for the itinerary places it on the east of the Ganges.† It is rightly placed there in the Chino-Japanese map of 1710, of which M. Julien has given a reduction. It seems very unlikely, too, that Hiuen Tsiang would turn inland and to the N. W. after arriving at Tamluk. Presumably he went there in order to embark for Ceylon, as his predecessor Fa-Hian had done. The biography, at all events, tells us‡ that he designed when at Tamluk, to sail to Ceylon and that he was dissuaded from doing so by a monk from southern India. This man advised him not to attempt so long and dangerous a navigation, but to sail from the S. W. point of India, whence he could make the journey in three days. This would give him an opportunity, the monk added, of visiting the sacred places of Orissa and other kingdoms, Hiuen Tsiang took this advice and started for the S. W. and arrived at Orissa. This is all straightforward; whereas the going to Karna Suvarṇa from Tamluk involved a *détour* of at least 140 miles.

For these reasons I am disposed to prefer the route given in the biography. I am not sure, however, if this is to the advantage of my contention that Karna Suvarṇa is Raṅgamāṭī. Neither route is discordant with the identification, but the Si-yu-ki one is more detailed. Raṅgamāṭī§ is nearly due north of Tamluk and 120 or 130 miles off, and the borders of Orissa are about an equal distance to the S. W. of Raṅgamāṭī. We must not press Hiuen Tsiang's measurements closely, for we do not know the exact length of the *li*, nor do we always know to what points he refers. He generally speaks only of countries, not of towns, and it may be that the distances are those to and from the confines of kingdoms.

* It describes the direction as easterly, but Koch Bihār and Kāmrap lie N. E. from Paṇḍuá.

† It seems a happy suggestion of Mr. Westmacott's that the name Pauṇḍra is preserved in Abú'l Faẓl's "Sarkár of Panjra." The chief objection to the identification of Paṇḍuá with Pauṇḍra Vardhana seems to be that the central or home-farm pargana of Sarkár Panjra, *vis.*, Haveli Panjra, lies N. E. of Dinájpur and far from Paṇḍuá which apparently is in Shashhazárl. [Áin, III, XV; Vol. II, p. 136 of Col. Jarrett's translation where it is called Sarkár Pinjarah. Ed.]

‡ I. 183.

§ There are several Raṅgamāṭis, and the best known, perhaps, is that in Lower Assam. But the one we have to do with is in Central Bengal and on the Bhágirathí. Sir H. Yule suggested that it might be the Kartasina of Ptolemy.

I now come to the principal object of my paper.

Hinen Tsiang's accounts of Karna Suvarṇa are to be found at I. 181 and III. 84–88, of M. Julien's work.* He describes the kingdom as having a circumference of about 900 miles, and the capital as being about four miles round. The country was fertile and populous, and produced all kinds of fruit and flowers. The inhabitants were well off and had literary tastes, but they were a mixture of true believers (Buddhists), and heretics. There were thirteen monasteries, including those which followed the ritual of Devadatta, and there were fifty Hindū temples. Then comes the description which I rely upon: "By the side of the capital there rises the monastery called Lo-to-wei-chi-seng-kia-lan. Its halls are spacious and well-lighted, and its towers and pavilions are lofty. All the men of this kingdom who are distinguished for their talents, their learning and their intelligence, assemble in this monastery."

Lo-to-wei-chi-seng-kia-lan is, according to M. Julien, the phonetic rendering of the Sanskrit words *Raktavīti Saṅghārāma*, i. e., the monastery of Redlands, and the word *Raktavīti* is, I submit, merely a synonym for *Rangamāṭi*.[†] *Saṅghārāma* is the Buddhist word for a monastery, its original meaning being the grove, or enclosed garden of the congregation. Wei-chi is phonetic for *vīti*, and Lo-to for *rakta* (blood,) and M. Julien and Mr. Beal agree in translating Lo-to-wei-chi as meaning red earth, one saying "*limon rouge*," and the other, "red mud." In his Index, III. 468, M. Julien uses a still more appropriate word for he renders wei-chi by "argile" or clay. Every one who has seen *Rangamāṭi* knows that its remarkable feature is the cliffs or bluffs of red clay. These extend for miles, are from 30 to 40 ft high, and formed the bank of the river in the days when the Bhagirathī was the main stream of the Ganges. I must acknowledge that I have not been able to find in the Sanscrit dictionary the word *Vīti*, though it is clear from the Chinese translation that it means earth. *Raktavīti* would, of course, mean red, but I suppose that the Sanskrit equivalent of *Rangamāṭi* would be *Rāgamṛttika* or *Raktamṛttika*. Possibly *mṛttikā* or *mṛtti* was what Hinen Tsiang wrote, for in the biography† the word is given as Ki-to-mq-chi for which M. Julien substitutes, in accordance with the Si-yu-ki, Lo-to-wei-chi. But *mo-chi* may be right and may be phonetic for *mṛtti*. However this may be, I submit that the facts of the monastery being known by the name of Redlands and of *Karnasuvarṇanagarha*, i. e., the golden fortress of Karna, being the traditional name of *Rangamāṭi*, are almost conclusive of the latter's being the place visited by Hinen Tsiang.

* Beal, *Life*, 181, Si-yu-ki, II, 201.

† I. 181; Beal's translation, 132.

It is unnecessary for me to dwell on the evidence of Rāṅgamāṭī's having once been a great city. This may be found in the paper of Col. Wilford in the 9th volume of the Asiatic Researches, p. 39, and in the descriptions by Capt. Layard, and Mr. Long. Capt. Layard's paper is in the 22nd volume of our Society's *Journal*, p. 281. He gives the name as Kansonapurī or Kurn-sona-ka-ghur, but Lassen * says the proper spelling is Karna suvarṇa gada. As noticed by Capt. Layard there is a mound at Rāṅgamāṭī, known as the Demon's Mount. This is probably a Buddhist *stupa* and should be excavated. There is also a story of a large signet-ring having been picked up on or near the mount, and having been taken to England. The local legend about the prosperity of the place, and the origin of the title Suvarṇa is that Vibhishana, the brother of Rāvana, visited the place on the occasion of the king's son's first meal of rice, and caused a shower of gold to fall on the land. It will be shown hereafter that there are other legends connecting the place with Ceylon. The Si-yu-ki goes on to tell how Buddhism was introduced into Karna Suvarṇa. It says that at a time when the people did not yet know the religion of Buddha, a heretical teacher came from the South of India and 'beat the drum of discussion.' His belly was covered with plates of copper, and he carried a torch on his head.† When asked why he was so attired,

* III. 760 n.

† Reinaud in his "Mémorial sur l'Inde avant le 11^e siècle," Paris 1849, p. 293, quotes an account from an Arabic work, the *Kitābu'l-fihrist*, of an Indian sect who took their name from the practice of girding their bodies with iron hoops. Every one who wished to enter this sect had to make a vow of sincerity and humility. He was obliged to have attained a certain degree of perfection before he could don the iron girdle. This girdle, according to the members of the sect, prevented the body from bursting with excess of knowledge, and power of contemplation.

The *Kitābu'l-fihrist* was written in 377 A. H., or 987 A. D., but it refers to an account of the Indian religions, which had been given by a man who had been agent in the last half of the eighth century by Yahya, the son of Khalad the Barmecide, to explore India. This account had been copied out by the famous Al-Kindī in 863 A. D. [Mr. C. J. Lyall, the President of the Society, has been kind enough to contribute the following note on this point:—

The passage in the *Fihrist*, to which M. Reinaud refers, is at p. 348, Vol. I, of Flügel's edition, (M. Reinaud wrote long before the publication of the text, and relied only on one faulty MS.). It runs thus—

و منهم اهل ملة يقال لهم البكرتينية يعني المصدقين انفسهم بالحديد و منهم
انهم يحلقون رؤوسهم و لحياتهم و يعبرون اجسادهم ما خلا العورة و ليس من منهم
ان يعلموا احدا ولا يكلموه دون ان يدخل في دينهم و يامرون من يدخل في دينهم
بالصدق للتواضع بها و من دخل في دينهم لم يصعد بالحديد حتى يبلغ المرتبة التي

he said that he had studied much, and had great wisdom, and so was afraid that he would burst; and that he carried a torch because he was moved with pity for the blindness of men. Ten days passed without any one being able to cope with him in argument. The king was in despair and said, "In the whole of my states are there no enlightened men? If no one can answer the difficult questions of this stranger, it will be a great disgrace for my kingdom. We must search again, and in the most obscure places." Then some one said, that there was an extraordinary *śramaṇa* who lived in a forest. The king went in person to bring him. The *śramaṇa* said that he, too, came from Southern India; and that his learning was but small. However, he would endeavour to satisfy the king on condition that, if he was not worsted, the king would build a monastery, and send for monks to promulgate the law of Buddha. The king assented, and the *śramaṇa* came to the hall of discussion. The heretical doctor produced a writing containing 30,000 words, but, in spite of his profundity and science, he was vanquished by the *śramaṇa* after a hundred words, and had to retire in disgrace. Thereon the king fulfilled his promise of building a monastery, and has since that time, says the biography, zealously propagated the teachings of the law. In the preface of the Si-yu-ki* there is an allusion to the copper-sheathed belly which seems to imply that Hiuen Tsiang was the victorious *śramaṇa*, but as M. Julien remarks, this does not agree with the account in the body of the work.

Probably the king who built the monastery was Śilāditya (the Sun of Righteousness), the Buddhist ruler of Kanauj.† The expression

يستحق بها ذلك وتصفيدهم انفسهم من اوساطهم الى صدورهم لئلا ينشق بطونهم
زعموا من كثرة العلم وغلبة الفكر *

In English:—

"Among them is a sect called the Bakrāntīnīs (*sic*: conjectured to be Bakrābantiya, = Vajrabandhiya), that is to say, those who chain themselves with iron chains. Their custom is to shave their heads and faces and to go naked, except as to their private parts. It is their rule not to instruct anyone, or to speak with him, until he spontaneously becomes a member of their sect. And they enjoin upon those accepting their religion to do alms in order that their pride may be humbled. One who joins their body does not put on the iron chains until he reaches the degree which entitles him to do so. They wear the chains from their waists to their breasts, as a protection against the bursting of their bellies—so they say—from excess of knowledge and stress of thought."

The conjecture Vajrabandhiya is Haarbrücker's (see *Fihrist*, Vol. II, p. 183). The passage appears to recur in Shahristānī's *Kitābu-n-Nihāl wal-Milāl*, p. 449.—Ed.]

* II. XXXVII; Beal's translation, 1, 4.

† Possibly however it was Pūrṇavarman of Magadha and who according to Hiuen Tsiang was the last descendant of Aśoka.

"in my states" seems to imply that he ruled over more than one kingdom. It is not likely that Śaśānka, the Hindú king of Karna Suvarna, would allow the introduction of Buddhism into his capital. I presume then that Hiuen Tsiang's visit was made after Śaśānka had been overcome by Śilāditya.

There are seven other references * to Karna Suvarna or to one of its kings. From them we learn that this king was called Śaśānka, i. e., the moon, and that he was jealous of the power of Rájavardhana, the king of Kanauj, and the elder brother and predecessor of Śilāditya. He therefore lured him to a meeting and treacherously murdered him. We also learn that he was a great enemy of the Buddhists and cut down their sacred tree † (*Bodhidruma*). He must have possessed considerable power, for, after destroying the law of Buddha, he went to Patna and tried to deface a stone throne which had been set up by Asoka, and bore the marks of Śākyamuni's feet. Lassen considers that the assassination of Rájavardhana ‡ took place in 614, the year of Śilāditya's accession. He also holds § that Śaśānka must have retained his independence during Śilāditya's reign, or otherwise he never would have ventured to cut down the sacred tree. But it seems clear that Śaśānka had done this long before and in the time of Śilāditya's predecessor. The words "*dans ces derniers temps*" do not mean recently, and we are expressly told in the 6th book of the Si-yu-ki (II. 349; Beal, II, 42), that the destruction of the law and the dispersion of the monks by Śaśānka occurred a great many years ago. We also find the Bodhisattva, when exhorting Śilāditya to accept the crown, referring to Śaśānka's previous acts in destroying the law. And at p. 251 l. c. (Beal, I, 213) we are told that Śilāditya became master of the five Indies in his sixth year. According to Mr. Fleet, Harshavardhana, i. e., Śilāditya began to reign in 606 or 607. So we may presume that Śaśānka died not later than 613. The Si-yu-ki (p. 469; Beal, II, 122) describes the manner of his death and says it occurred a long time ago. Śaśānka must then, have been dead twenty or thirty years before Hiuen Tsiang went to Karna Suvarna. We know that there had been time to introduce Buddhism and to build a large monastery before he visited the place.

* I 112, 235 II 249, 340, 422, 463, 468-9; Beal, Life, 83; Si-yu-ki, I, 210-213, II, 42, 91, 118, 121-2

† Púrnavarman irrigated it with milk, and it shot up in a night to the height of ten feet. At the time of composing the Si-yu-ki it was 44 feet high. If this account be taken as correct, a botanist might calculate the date of Śaśānka's violence.

‡ He calls him Harshavardhana. Mr. Fleet holds that the accession was in 606 or 607.

§ III. 686

The name Sasānka,* does not occur in Abū'l-faḡl,† or Tieffenthaler,‡ but the first has a *Shashatdhur*, and the second a *Scheschdur*. These are clearly corruptions of Sasādhara, (the moon,) and it is quite possible that this is another form of the name Sasānka. Both words mean hare-marked or hare-bearing, i. e., the moon, and apparently the pilgrim translates Sasānka simply by the Chinese word for moon. If this is so, the fact is very important, for Sasādhara belonged to the line of Adisūra, and was the eighth in succession from him. He is said to have reigned 58 years, but the reigns of all the princes of this line seem unreasonably long. However if Sasānka and Sasādhara be identical, Adisūra can hardly have been later than the first half of the 6th century. There seems nothing incredible in this for Lassen§ says that he is wrongly referred to the 9th or 10th century, and that he must have lived in the beginning of the 7th century. But if he was not later than 600, he must, I think, be put back still further, for it was Adisūra who brought Brāhmins from Kanauj to Bengal. He could not have done this during the Aditya dynasty for they were Buddhists. Their dynasty began according to Lassen in 580, and so Adisūra must have reigned before that date, and perhaps was contemporary with one of the early Guptas.|| M. Saint Martin suggests that Huen Tsiang went out of his road to visit Kara Suvarṇa, on account of the connection of the neighbourhood with Vijaya and the conversion of Ceylon. This is not very likely, since Huen Tsiang says nothing about it, and he was not deeply interested in Ceylon, for he never went there. The fable, however, about Vijaya is interesting as showing an early connection between Bengal and Ceylon. Vijaya probably came from Singbhūm ¶ His story

* Mr Fleet's work, *Corpus Inscriptionum Indicarum*, III, for a reference to which I am indebted to Dr Waddell's paper shows (p. 263), that there is an inscription of Sasānka at Rohtās. With reference to this identification, however, and also to General Cunningham's remark that there is a tank in Bogra named after Sasānka, it may be well to bear in mind that according to the Huchman MS., Vol. Bhūgalpur I. 183, there was a Sasānka, a Kshetrari Rājā of Kharakpur, who was put to death in 1502 (910 Fasli) [Apud Moutgomery Martin, II, 57. Ed.]

† Ain I. 413.

‡ Tieffenthaler, I. 472

§ III. 718.

|| III. 393.

¶ His mother was the daughter of the King of Baṅga by a Kalmiṅga Princess, a circumstance which points to an early connection between Bengal and the Madras coast. She was brought up in her father's city of Baṅga which presumably lay in South-east Bengal or somewhere about Samatāṭa. There can be no doubt that the forest of Lāla where the caravan in its way to Magadha (S. Bihār) was dispersed, and she fell into the power of a lion, is the Rāṭh country west of the Bhāgirathī. See Upham, *Sacred books of Ceylon*, I. 60 and II, 164.

is told in Chapter VI of the *Mahavamsa*, and in the 11th book of the *Si-yu-ki*. A more historical event is referred to by Wilford and Layard when they mention the local tradition that Raṅgamāṭi was destroyed by an expedition from Ceylon. This must have occurred after Hinen Tsiang's visit to Karna Suvarna, and in my opinion, it belongs to the 12th century. I think that there is no reason to doubt the legend, for people are not in the habit of inventing disasters. But if true, it can only, I think, have occurred in the time of Parākrama Báhu, the Great. His reign is described by Turnour as having been the most martial, enterprising, and glorious in Singhalese history. He, too, seems to have been the only prince of Ceylon who carried his arms across the Bay of Bengal, or who possessed a fleet. There is an account of the expedition in the 76th Chapter of the *Mahavamsa*.* It was directed against the king of Arámma, or Ramámma, which according to Mr. Wijesinha lay between Arracan and Siam. Five ships came to the port Kúsúmi, in the country of Ramámma and the troops "like furious elephants destroyed a great number of cocoa-nut and "other trees, and the places round about them, and burnt many "villages with fire and destroyed half of the kingdom." A Tamil general named Adhikári, who had volunteered for this service, cast anchor in the port of Papphala (Pippli?). One of the ships attacked the island of Kákadvīpa† (?) or Crow Island, and brought away many of the inhabitants as prisoners to Ceylon. Arimaddana, the king of Ramámma was killed by the invaders. Perhaps his name was Ari-Mardana, i. e., the trampler of foes, or it may have been Hari Madana. (It seems worth while to note here that there was a king of Orissa who was called Madana Mahádeva, and who had a short reign of four years from 1171-75.)

Kúsúmi as the name of the port, reminds us of Wilford's statement that Raṅgamāṭi used to be called Knsumapurí. The name, however, is a common one, and was applied to Patna and other towns. The statement that Ramámma is the country between Siam and Arracan is, perhaps, only a conjecture of Mr. Knighton, though I find that Sir Arthur Phayre mentions Ram-ma-we-li as a town and country near Sandoway (J. A. S. B. XIII. 27). On the other hand, we have Ramana marked in Gastaldi's old map,‡ as a place east of Orissa and near Hijli.

* Wijesinha's translation. Colombo, 1889. See also Lassen IV. 328.

† Probably this is Cocanada in the Madras Presidency. According to the Imperial Gazetteer of India the proper spelling is Káka-náda and the meaning is Crow-country. If the Coromandel coast was the point of attack one can see why the services of a Madras officer were valuable.

‡ Cluverius mentions Ramama as the capital of Orissa and as a mart famous for ivory and precious stones. He also says that the country was rich in salt. See

It may also be worth while mentioning that *Sudhārām* is a native name for the district of Noakhāl. I do not know its age or origin, but it may mean *Suddha-ārāma*, the place of delightful rest, and if so the last half of the name approaches the *Arāmma* of Turnour. One reason given for the expedition was that "the king of Ramāmma had obstructed persons who were bringing presents from a king of India to Ceylon." On one occasion when a certain chief of India, *Kassapa* by name, sent presents unto him (*Parākrama*) of great value, with a letter written on a leaf of gold, he hindered the men who bore them from landing and then caused the presents to be taken from them with the letter and sent into the city with great dishonour.* This looks like the action of a king of Orissa or Bengal, who would have control of the ports, such as *Tāmralipti*, &c. It appears, too, that the expedition ravaged the coast of Coromandel, and so may easily have also attacked Bengal and Orissa. However this may be, and allowing that the expedition was directed against Siam or Cambodia, it must have been easy for the armament, on its way to or from the seat of war, to sail or march up to *Rangamāti* and destroy it. It is not likely that the ships would steer right across the Bay, or sail direct from Ceylon to Siam. It is to be hoped that some day *Kākadvipa*, *Papphala*, &c., will be satisfactorily identified.

As for the date of the expedition it was certainly not earlier than the 16th year of *Parākrama Bāhu's* reign. According to Turnour his accession took place in 1153, so that the 16th year would be 1169. According to the *Wijesinha*, *Parākrama's* reign began in 1164, which would give 1180 as the 16th year. Lassen adopts Turnour's date of accession, but places the expedition in the year 1172. We are told that five months were employed in making preparations, and that provisions for twelve months were collected. If Mr. *Wijesinha's* date of accession then be correct, the expedition may have been as late as 1182 or '83. Under any circumstances it would be some years before the Muhammadan invasion of Bengal.

According to the tradition collected by Capt. Layard there was a king of *Rangamāti* called *Karna Sena*. If this was so, he cannot have been the *Karna* who gave his name to the city. The latter was, perhaps, the *Karna* of the *Mahabhārata*, who was sometimes called *Karna Dātta*, and was half brother of the *Pāṇḍavas*. He was king of *Anga*, and had seats at *Bhāgalpur* and *Monghyr*. No such name as *Karna* occurs in the lists of the *Vaidya* kings of *Gaur*.

Stram's ed., Amsterdam, p. 332. Philip Clavier or Claverius was one of the most celebrated of our early geographers. He was born at Dantzic in 1580, and died at Leyden in 1623.

* *Wijesinha's Mahāvamsa*, p. 228.

NOTE ON DR. WADDELL'S PAPER.*

I did not know of or see Dr. Waddell's paper until I had nearly finished my own. He proposes to identify Karna Suvarṇa with Kañchannagar, near Burdwan. He has taken pains with the subject and his article contains some valuable information, but I think that his identification is quite untenable. It seems to me unfortunate that when Dr. Fergusson† and he had the clue in their hands they should have let it slip. Both of them refer to Raṅgamāṭi, in Murshidābād; but both of them put it aside. Fergusson thought that the capital might afterwards have been transferred to Raṅgamāṭi, and that in this way it got the name of Karna Suvarṇa, but he would not accept it as the place visited by Hsien Tsiang, because he thought Hsien li's account of the route to it incorrect. Apparently, too, he failed to notice that Raṅgamāṭi was equivalent to the name of the monastery mentioned by Hsien Tsiang. He chose Nagar in Bībhūm, a place which I have seen and which I think, has no claim to be Karna Suvarṇa. But a writer who refused to believe that the Tāmra-lipi of Hsien Tsiang was Tamluk cannot be regarded as a safe guide.

Dr. Waddell has rejected Raṅgamāṭi partly, as I conceive, because he has never seen it, and so does not know the evidence of ancient greatness which it exhibits. His words are as follows:—"The proposed identification with the fort of Kurn, near the village of Raṅgamāṭi, in Murshidabad district, about 130 miles to the north-east of Tamluk, is quite untenable, as it is so out of keeping with the pilgrim's text, and possesses nothing suggestive of the site, except the local name of Raṅgamāṭi, and having proceeded so far northwards, the subsequent journey of 700 li to the south-west could not carry the pilgrim to the frontier, much less to the capital of Orissa, his next stage.‡

I do not know what is meant by the phrase "proposed identification" in this extract. So far as I know, Raṅgamāṭi has never been proposed before. Perhaps Colonel Yule made such a proposal, but if so, the reference given by him, J. R. A. S. XVIII. 395, is wrong. The only reference given by Dr. Waddell is to Captain Layard's paper, but certainly that says nothing about Hsien Tsiang. It was hardly possible, if not quite impossible, that it should, for Layard's paper was published in our Society's *Journal* in 1853, and M. Julien's translation of the biography only appeared in that year, and this translation of the Si-yu-ti not till 1858. Nor do I know what is meant by the "fort of Kurn." Nobody has ever used that name or spoken about the Kurus in connec-

* Published by the Government of Bengal last year, as an Appendix to a paper on Pāṭaliputra.

† J. R. A. S., VI. 248.

‡ p. 25.

tion with Raṅgamāṭī. As to the distance-difficulty, I quite admit that so far Burdwan may agree as well with Hiuen Tsiang's statement as Raṅgamāṭī. I do not think, however, that it has any superiority in this respect. I do not know why it should be assumed that Jāipur was the capital of Orissa in Hiuen Tsiang's time, or that his distances are for capitals and not for the confines of kingdoms. The direction of Burdwan from Tamruk is a little more westerly than that of Raṅgamāṭī, but still it is mainly north. Besides Dr. Waddell takes no notice of the route given in the biography, viz., that from Paṇḍuā, or from the monastery five miles to the west of it. That route certainly agrees better with Raṅgamāṭī than with Burdwan. However, I lay little stress on directions and still less on distances. The two strong points in favour of Raṅgamāṭī are—first, it used to be called the Fort of Karna Suvarna, and secondly, that Raṅgamāṭī is an equivalent for Rakta-Viṭi and Lo-to-wei-chi, or Lo-to-mo-chi. Raṅgamāṭī is not the only place in the neighbourhood which is associated with Karna. The village and *tháná* of Go-Karna, i.e., the cowshed of Karna, is close by.

On the other hand, Kañchannagar seems to be an obscure place, a sort of suburb of Burdwan. No evidence is adduced of its having been "the traditional capital of the country." I do not know who Belasur was, but I see that Captain Layard says there was a tank at Raṅgamāṭī called the Bel Talao. Probably the name is connected in both instances with the Bael tree, which is sacred to Siva. There is also at Raṅgamāṭī the almost obliterated site of an ancient tank called the Jamuná Tank and in which a curious image figured by Captain Layard was found.

Kañchannagar is a common name in Bengal, and has its own distinct meaning, viz., the city of gold. I do not see how it can be twisted into meaning the city of Karna Suvarna.

P. S.—I have lately come upon an interesting piece of evidence about the antiquity of the name of Karna Suvarna. In the genealogy of Rájá Rádhá Kánta Deva, prefixed to the 8th volume of the *Sabdakalpadruma*, and also in the sketch of his life by the editors of the second edition, it is stated that his earliest known ancestor, Śrī Hari Deva, was a resident of Karna Suvarna, near Murshidábád. Rájá Rádhá Kánta Deva was the twenty-fifth in descent from Śrī Hari, and was himself born in 1783, so that Śrī Hari probably lived in the 12th century. Rájá Rádhá Kánta lived to at least the age of 76, and if we allow 26 years for each generation of his ancestors, Śrī Hari may have lived at Karna Suvarna before its destruction by the troops of Parákrama Báhu.

For convenience of reference I subjoin Wilford's notes of Raṅgamāṭī in the 9th volume of the *Researches*: "Tradition says that the

“king of Lauká, which implies either the country of the Mahárajah of
 “Lapági or Ceylon, but more probably the first, invaded the country of
 “Bengal with a powerful fleet and sailed up the Ganges as far as Rang-
 “máti, then called Kusumapuri, and a considerable place where the King
 “or Mahárajá often resided. The invaders plundered the country and
 “destroyed the city. This happened long before the invasion of Bengal
 “by the Musalmans, and seems to coincide with the time of the invasion
 “of the peninsula by the Mahárajá of Lapági. This information was
 “procured at my request by the late Lieutenant Hoare, who was remark-
 “ably fond of inquiries of this sort, and to whom I am indebted for
 “several historical inquiries and other particulars relating to the geo-
 “graphy of the Gangetic provinces.”

Apparently Lieutenant Hoare is the officer referred to as Captain Hoare in the 7th vol. of the *Researches*, p. 175, as having taken part in procuring copies of the inscriptions on the Delhi pillar. Wilford thought that Lanka might mean Lapági, i. e., Java, because two Arabian travellers of the 9th century mentioned by Ronodot had referred to the king of Lapági's having devastated the coast of India. But there seems no reason for supposing that Lauká ever meant any other place than Ceylon. Layard, writing in 1853, says, he too was told of the Lanka expedition, but with a different version. Unfortunately he does not give the version, but perhaps it was only that the place was Ceylon and not Java. Layard objects to Lieutenant Hoare's account that Rangamati was formerly called Kusumapura, but it is just possible that it was both called Kusumapura and Kansa Suvarna. Or the Ceylonese may have been mistaken, like Lieutenant Hoare, and written Kusumi instead of Kansa Suvarna.

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PROCEEDINGS
OF THE
ASIATIC SOCIETY OF BENGAL.
FOR APRIL, 1893.

I.—On *ERITES*, an oriental genus of satyrid butterflies:—By
LIONEL DE NICEVILLE, F. E. S., C. M. Z. S.

[Received 16th February;—Read 1st March, 1893.]

The genus *Erites* at the present date contains five species only, (six if *E. ochreana* is held to be a distinct species, I have not seen it), found in Assam, Burma, the Malay Peninsula, Sumatra, Java, Labuan, Borneo, and the Philippines. To these I now propose to add a sixth. All are closely allied, and very similar in general aspect. They are extremely delicate butterflies, semi-transparent, of a brownish-ochreous shade, sometimes just tinted with violaceous on the upperside. All possess a submarginal series of ocelli to both wings, more or less visible on the upperside. These ocelli vary greatly in size, in some species they are large and prominent, in others quite small and inconspicuous. On the underside there are usually two discal bands, often more or less angled. These butterflies are found only in virgin forests as far as I am aware, and fly weakly close to the ground amongst the brushwood under the great trees and in open paths through the forests. Their transformations are unknown. The males have no secondary sexual characters. The females differ only from the males in the wings being somewhat broader, and in having the apex of the forewing more rounded.

I give below a key by which the several species may be distinguished:—

Key to the species of *Erites*.

A. Forewing with five equal-sized ocelli.

1. *E. elegans*, Borneo.

B. Forewing with the posterior ocellus very much larger than the others.

- a. Forewing with the large ocellus on the upperside prominently pupilled with white. The apex of the wing falcate.

2. *E. falcipennis*, Assam; Burma.

- b. Forewing with the large ocellus on the upperside blind or nearly so. The apex of the wing rounded.

1. Both wings with all the ocelli prominent and well-formed on the underside.

- a². Forewing with three small apical ocelli only in addition to the large anal one.

3. *E. medura*, Java; Philippines.

- b². Forewing with four apical ocelli in addition to the large anal one.

- a³. The inner discal band on the hindwing straight.

4. *E. argentina*, Labuan; Borneo; Malacca.

- b³. The inner discal band on the hindwing highly angled outwards in the middle.

5. *E. angularis*, Burma; Malay Peninsula; Sumatra.

- b⁴. Both wings with all the ocelli inconspicuous except the anal one in the forewing, reduced to black dots only.

6. *E. rotundata*, Burma.

1. ERITES ELEGANS, Butler.

E. elegans, Butler, Cat. Diurn. Lep. B. M., *Satyridae*, p. 147, n. 2, pl. ii, fig. 4, female (1868); id., Druce, Proc. Zool. Soc. Lond., 1873, p. 340, n. 2; id., Staudinger, Ex. Schmett., p. 230, pl. lxxxii, male (1887).

HABITAT: Borneo (Butler, *British Museum*; Druce; Staudinger); three males Borneo, one female Padas River, North Borneo (collection de Nicéville).

2. ERITES FALCIPENNIS, W.-M. and de N.

E. falcipennis, Wood-Mason and de Nicéville, Butt. of India, vol. i, p. 237, n. 230 (1883); idem, id., Journ. A. S. B., vol. lv, pt. 2, p. 351, n. 30, pl. xvi, fig. 2, male (1887).

HABITAT: One male Silchar, August; one male, Nemotha, September—both in Cachar, Assam (*Wood-Mason, collection Indian Museum*); one male, Fort Lungleh, Lushai Hills, October, 1890 (*R. Pughe, collection de Nicéville*); one female, Karen Hills, Burma, April (*collection Phayre Museum, Rangoon*).

3. *ERITES MEDURA*, Horsfield.

Hipparchia medura, Horsfield, Cat. Lep. Mus. E. I. C., pl. v, figs. 8, 8a, female (1829); *Erites medura*, Marshall and de Nicéville, Butt. of India, vol. i, p. 236 (1883); id., Pagenstecher, Jahr. des Nass. Vereins für Natur., vol. xliii, p. 96, n. 15 (1890); *E. medura*, var. *ochreana*, Staudinger, Iris, vol. ii, p. 38 (1889); *E. ochreana*, Semper, Schmett. Philipp. Inseln, p. 326, n. 407 (1892); *Satyrus (Erites) medura* (sic), Westwood, Gen. Diurn. Lep., vol. ii, p. 392, n. 47 (1851); *Erites madura*, Horsfield and Moore, Cat. Lep. Mus. E. I. C., vol. i, p. 229, n. 484 (1857); id., Hewitson, Journ. Linn. Soc. Lond., Zoology, vol. viii, p. 145 (1865); id., Butler, Cat. Diurn. Lep. B. M., *Satyridæ*, p. 146, n. 1 (1868).

HABITAT: JAVA (one female, Horsfield collection in the British Museum); East Java (Pagenstecher); Palawan, Philippines (Staudinger).

Mr. Hewitson (l. c.) describes a variety of this species as follows:—"Male and female. With five ocelli on the anterior wing, one large and four small. Sumatra; Singapore." This almost certainly equals *E. angularis*, Moore, which undoubtedly occurs in the Malay Peninsula, and also in Sumatra, as Dr. L. Martin, of Deli, Sumatra, informs me.

Mr. Hewitson also describes another variety thus:—"Male and female. With the five ocelli of the anterior wing small and of equal size, Singapore; Sarawak." This can only refer to *E. elegans*, which certainly occurs in Borneo, but very doubtfully in Singapore, at any rate it is not recorded from thence by Mr. Distant in "*Rhopalocera Malayana*," nor have I seen a specimen from any part of the Malay Peninsula.

4. *ERITES ARGENTINA*, Butler.

E. argentina, Butler, Cat. Diurn. Lep. B. M., *Satyridæ*, p. 188, n. 5, pl. v, fig. 8, female (1868); id., Druce, Proc. Zool. Soc. Lond., 1873, p. 310, n. 1; id., Distant, Ann and Mag. of Nat. Hist., fifth series, vol. xix, p. 48, n. 21 (1887).

HABITAT: Labuan, an island off the N.-W. coast of Borneo (Butler, in coll. British Museum); Borneo (Druce and Distant); Borneo; Malacca (Staudinger); S.-E. Borneo (collection de Nicéville).

Unfortunately I possess no specimen of *E. medura*; but comparing the figures of *E. medura* and *E. argentina*, both taken from female specimens, and a single male of the latter in my collection, the only point of difference I can discover between them is that *E. medura* lacks a small ocellus in the second median interspace of the forewing which is present in *E. argentina*.

5. *ERITES ANGULARIS*, Moore.

E. angularis, Moore, Proc. Zool. Soc. Lond., 1878, p. 825; id., Distant, Rhop. Malay., p. 46, n. 1, pl. v, fig. 3, male (1892); id., Marshall and de Nicéville, Butt. of India, vol. i, p. 236, n. 229, pl. xvi, fig. 50, female (1883).

HABITAT: Taoo plateau, 3,000—5,000 feet, Upper Tenasserim

(Moore) ; Perak (Distant) ; Meplay Valley, January ; Thoungyeen forests, March ; near Moulmein, October (Marshall and de Nicéville) ; Yoonzaleen Valley, November ; Myitta, January, both in Burma ; Rawan, Selangor, Malay Peninsula, December (collection de Nicéville).

In this species there are four small equal-sized ocelli and ~~one~~ large ocellus to the forewing, the ocelli of the hindwing prominent ; the inner band of the hindwing strongly outwardly angled in the middle ; the outer band is twice outwardly angled, once in the middle, and once where it is crossed by the second subcostal nervule, this feature being only found in the otherwise quite distinct species, *E. elegans*.

6. ERITES ROTUNDATA, n sp.

E. angularis, Watson (nec Moore), Journ. Bomb. Nat. Hist. Soc., vol. iii, p. 19, n. 38 (1888).

HABITAT : Burma.

EXPANSE : ♂, 2.0 to 2.1 ; ♀, 2.2 to 2.4 inches.

DESCRIPTION : MALE. UPPERSIDE, both wings semi-transparent, brownish-ochreous. Forewing with the two discal bands of the underside showing through by transparency ; a large, almost round (slightly oval) black ocellus in the first median interspace and extending slightly into the two interspaces beyond, obscurely pupilled with plumbeous, and surrounded with an ochreous ring. Hindwing with a prominent discal ochreous band, outwardly angled in the middle ; four large round blind black ocelli, surrounded each by a very wide ochreous ring, the rings touching, thus forming a continuous band, one ocellus in each interspace from the first median to the second subcostal nervule ; two fine ochreous and two fine fuscous marginal lines. UNDERSIDE, both wings finely striated with purplish-fuscous ; the four apical ocelli present in the forewing of *E. angularis*, Moore and the five of the hindwing reduced to minute black dots in this species. Forewing with the fifth large ocellus much as above, but the black portion is smaller, the ochreous ring wider, and the pupil prominent and silvery ; two prominent discal deep ochreous bands outwardly sharply defined by a black thread commencing close to the submedian nervure, the inner band straight, crossing the discoidal cell obliquely about its middle, and becoming lost before reaching the subcostal nervure ; the outer band curved and bounding the wide ochreous outer ring of the large ocellus in the first median interspace, the band ending on the third median nervule. Hindwing with faint traces of two discal bands, the inner one straight, the outer one angled outwardly once only, as in all the species of the genus except *E. angularis* ; the marginal lines as on the upperside. FEMALE hardly differs from the male, except that the wings are broader,

the apex of the forewing is more rounded, and the forewing has similar fine marginal lines as are found in the hindwing of the male. This species differs structurally from *E. angularis* in that the tooth or angulation at the termination of the second median nervule of the hindwing is as great or greater than that at the third; in *E. angularis* this tooth is quite small.

In one specimen in my collection from the Pegu Yoma, taken in December, the markings are almost as prominent on the underside as in *E. angularis*, there are two apical well-formed ocelli to the forewing, and five ocelli to the hindwing, the discal bands well-marked, but as the inner band of the hindwing is straight (not outwardly strongly angled in the middle), and the outer band is once outwardly angled only (instead of twice), I have no hesitation in placing this specimen under *E. rotundata* rather than under *E. angularis*. Another specimen in my collection taken at the same place and time is quite typical *E. rotundata*.

In the Proceedings of the Zoological Society of London for 1891, page 268, Mr. H. J. Elwes records *E. medura*, Horsfield, from East Pegu, Upper Burma, and places *E. angularis*, Moore, with a query as a synonym of that species, and makes the following remarks:—

“Numerous specimens were sent by Doherty from East Pegu, taken at about 1,500 feet [during March and April], of which several females and one male were by him supposed to be, and marked as a distinct species. These correspond to the female taken in the Thoungyeen forests by Major Bingham, and described by Marshall and de Nicéville, ‘Butt. of India,’ vol. i. p. 237,* as nearer to *E. medura* of Java than to *E. angularis*.”

“After examining the series closely and comparing them with one Javan specimen, I do not see how to separate the two species [*E. medura*, Horsfield, and *E. angularis*, Moore], for, though in the supposed new

* “A female taken in the Thoungyeen forests in March differs from our other female specimens in the ocellus on the upperside of the forewing being very nearly round, not oval, with a distinct yellow iris of equal width throughout; the outer fascia of the hindwing much broader and very distinct; four large black spots beyond twice the size of those in the other specimens, the yellow irides prominent and touching. On the underside of the hindwing the two discal fasciæ have almost disappeared, and the five submarginal ocelli are very minute. This specimen differs only in the following particulars from Horsfield’s figure of *E. medura*: The outer margin of the forewing is not quite so evenly rounded, being in fact slightly concave; the large ocellus is not quite so large as in *E. medura*, and the iris is less wide. On the underside the apical ocelli on the forewing are smaller, and on the hindwing the ocelli are minute, and the fasciæ are obsolete. This specimen, however, is much nearer *E. medura* than *E. angularis*.” (Marshall and de Nicéville, l. c.)

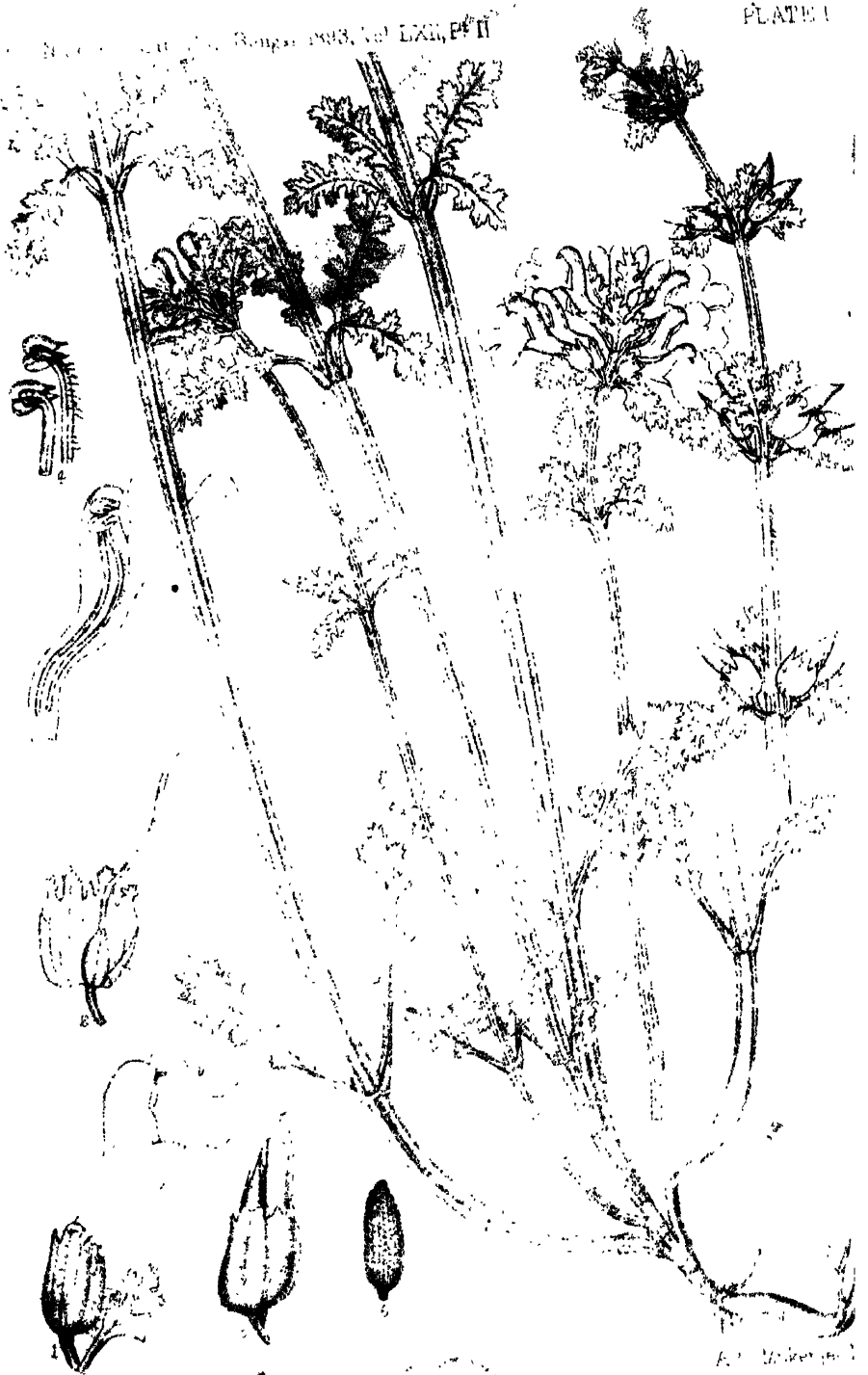
species the ocelli on the upperside of the hindwing are much larger than in the other form from the same locality, whilst on the underside both the ocelli and the bands are almost obsolete. I am rather inclined to suspect seasonal dimorphism, and to think that this form is the last of the first brood, and the others, among which males are far more numerous, are the first of a second brood. In the "Iran" specimen we have the hindwing like one form below and the other above. Further observations are requisite to decide the question."

E. medusa and *E. angularis* are abundantly distinct. The former has three apical ocelli in the forewing, the inner discal band straight, the outer band apparently once outwardly angled in the hindwing; while the latter has four apical ocelli, the inner band outwardly angled in the middle, the outer band twice outwardly angled.

Mr. Elwes suggests that seasonal dimorphism may occur in the genus. At present I see no indications of the appearance of this phenomenon, at any rate if the usual form of seasonal dimorphism observable in the *Satyrinae* is understood. I possess the strongly ocellated *E. undularis* taken in January, October, November, and December, all of which months (except occasionally October) are dry months, when the ocelli should be obsolete: while the two type specimens of *E. falcipennis* were taken in the height of the rainy season, August and September, but have minute ocelli, instead of the normal rainy-seasonal large and well-developed ocelli. I append a note by Mr. W. Doherty on the subject, which bears out my opinion, and I may add that it is at his suggestion that I have described *E. rotundata*.

"The prehensors of *Erites* are slender and simple, and of the usual satyrid type, resembling those of most of the species of *Lethe* (*Debis*), to which the genus seems allied, the true *Lethe* (*europa*, Fabricius) being exceptional in having the upper organ without branches. Seen from the side, the upper organ (uncus, tegumen) of *E. angularis* is unusually straight; that of *E. rotundata* is much more depressed terminally. In both species the lower organ (clasp, harpago) is truncate at the tip, but in *E. angularis* it is cut square, while in *E. rotundata* the end is concave, so as to form a distinct scallop."

"Apart from these differences in the prehensors, I think Mr. Elwes' supposition, that *E. rotundata* may be the dry-season form of *E. angularis*, an unlikely one. No seasonal variation has yet been observed in the genus. I found *E. angularis*, which should be the wet-season form, commoner in the dry-season than *E. rotundata*. Finally, the dimorphism, if it exists, must be of a new type. Dry-season forms are distinguished by obsolete ocelli and angular wings, but here the non-ocellate form has the wings abnormally rounded."



D. Prain del.

ANDRACHNE ARIS. DIPHYLLA Prain

R. H. Baker del.

Two species of *Pedicularis*.
P. simplex var. *ramosa* Prain, *sp. nov.* One specimen
 one from Seeling, Upper Burma, 27th March, 1889, two
 males, the 29th idem, one female, 14th April, by Lieut.
 E. Y. Watson; two males taken in the Pegu Yoma, Burma, by a native
 collector employed by the Phayre Museum, Rangoon, in December;
 one female from Quaymoon, Tenasserim, captured in March and another
 in November, in the Yoonzaleen Valley, also in Tenasserim by Major
 C. T. Bingham.

Two species of Pedicularis.—By D. PRAIN.

(With Plates I and II)

[Received March 9th—Read April 5th.]

In 1889 (*Journ. As. Soc. Beng.* lvi pt. 2, p. 255) the writer had the honour to communicate to the Society descriptions of a number of new Indian species of this genus. Since then a considerable number of new species have been reported from China and Tibet and have been described in various periodicals by Messrs Maximowicz, Hemslay and Franchet, and by the writer. Now, another new Indian species has been reported; of this a description is given below and the present opportunity is taken of describing an allied new species from Szechuen.

1. *PEDICULARIS DIFFUSA* Prain, *sp. nov.* (Pl. I.)

Elasta simplex vel e collo diffuse ramosa, radice debili ramosa collo esquamato, caulibus gracilibus simplicibus, foliis radicalibus longe petiolatis mox evanescentibus caulinis 4-natis verticillatis laminis glabrescentibus ovato-oblongis pinnatisectis, segmentis 5-8-jugis oblongis obtusis inciso-serratis; floribus verticillatis verticillis numerosis inter se remotis, bracteis foliaceis oblongo-ovatis petiolatis pinnatifidis et inciso-serratis; calycis brevis pedicellati campanulati membranacei inflati totius reticulati antice vix fissi dentibus majusculis inaequalitatis anticis et lateralibus ovatis inciso-serratis illis duplo his 4-plo summo deltoideo integro latoribus; corollae rosae tubo sursum ampliato calyce duplo longiore basi infracto, labio 3-lobo lobis oblongo-ovatis margine sinuatis lateralibus medio dimidio majoribus, calen- latis angustis tubo subcontinua apice subincurva erectis; staminibus ex tubo summi ovarii insertis filamentis anticis superne hirsutis; ovario ovoideo stigmate parum exserto, capsula anguste lanceolata apice acuta calyce duplo longiore, seminibus ovoideis testa nigrescente minute reticulatis.

In HIMALAYA ORIENTALI: Sikkim, Mt. Tankra, 11,500 p. a. n. : G. A. Gamble!

Caulibus 40–60 cm. longis, foliis caulinis 2–2.5 cm. longis his 0.75–1 cm. latis, segmentis 5 mm. longis 3 mm. latis, petiolis 0.5–1 cm. longis; calyce 6 mm. longo hoc 3.5 mm. lato; corollae tubo 10 mm. longo apice 4 mm. lato, galea 5 mm. longa, labio 8 mm. lato; capsula 12 mm. longa 5 mm. lata.

This species is most nearly related to *P. verticillata* Linn. and *P. refracta* Maxim. but besides differing greatly in habit and foliage from both it differs from *P. verticillata* in having a calyx with large teeth and with a tube reticulated throughout, while it differs from *P. refracta* in having the anterior and lateral calyx teeth serrate and not entire; from both it differs in having acute, not mucicous, anther-cells.

Of Indian species, it in habit much resembles *P. flexuosa* Hook. f., though it is glabrescent while that species is hirsute, but the plant that it imitates most closely is *P. gracilis* Wall. var. *macrocarpa* Prain, the likeness being so great that though in flower they differ so widely, it is not easy to distinguish fruiting specimens of the two.

2. PEDICULARIS FLACCIDA Prain; sp. nov. (Pl. II.).

Ascendens glabra caulibus gracilibus corymbosim ramosis, foliis ramisque 3–4-natis verticillatis radicalibus mox evanescentibus caulinis breve petiolatis ovatis pinnatifidis segmentis 5–6-jugis obtusis inciso-serratis; floribus in verticillis 4-floris paucis remotisque dispositis, bracteis foliaceis calycem excedentibus; calycis glaberrimi parvuli campanulati antice parum fissi 5-dentati segmentis omnibus oblongis integris tubo costato nec reticulato; corollae tubo sursum ampliato calycem 3-plo excedente basi infracto, labio 3-lobis lobis lateralibus ovatis medio orbiculato basi constricto 3-plo majoribus, galea leviter arcuata tubo subcontinua apice subincurva crostri, staminibus ex adverso medii ovarii insertis omnibus glabris, antheris contiguis muticis; ovario ovoideo stigmato exserto.

In CHINA OCCIDENTALI; Szechuen occident. prope Tachienlu, Pratt n. 471!

Caulibus 20–25 cm. longis foliis caulinis 1 cm. longis his 0.7 cm. latis segmentis 2 mm. longis 1 mm. latis, petiolis 0.5 cm. longis; calyce 2.5 mm. longo hoc 2 mm. lato; corollae tubo 8 mm. longo apice 4.5 mm. lato, galea 4 mm. longa, labio 7 mm. lato.

Like the preceding species this is also closely related to *P. verticillata* Linn. but differs considerably in habit, and though it has the calyx tube ribbed and not reticulated just as *P. verticillata* has, it differs in having the calyx distinctly toothed and extremely small. The stamens also differ in being all glabrous whereas in *P. verticillata* the anterior

petals lobed; the anthers though mucous as in *P. verticillata* are contiguous and not discrete. The fruit is unknown.

As both these species belong to one natural group it may be useful to provide a key, modified, so as to admit of their reception, from the key already published by the writer (*Ann Roy Bot. Garden, Calcutta*, iii, '94), in which the relative position of these and of the previously known species is shown.

VERTICILLATAE

Galea less than half the length of the lip :—

Bracts flabellate, spike long, dense; calyx small, subglobose, not cleft, teeth small, entire; anterior filaments hairy ... *P. spicata*

Bracts oblong or linear, spike short; calyx large ovate, teeth large :—

Calyx not cleft, teeth crested except the upper; filaments not hairy ... *P. lineata*.

Calyx cleft, teeth all entire; anterior filaments hairy ... *P. likiangensis*

Galea about equal in length to the lip :—

Calyx-tube not net-veined between the ribs :—

Calyx cleft, hardly toothed; anthers discrete, anterior filaments hairy ... *P. verticillata*

Calyx not cleft, distinctly toothed; anthers contiguous, filaments not hairy ... *P. flaccida*

Calyx-tube net-veined between the ribs :—

Calyx hardly cleft, teeth crested except the upper, anterior filaments hairy ... *P. diffusa*

Calyx distinctly cleft, teeth entire :—

Margin of galea even; anterior filaments hairy ... *P. refracta*.

Margin of galea toothed; filaments not hairy ... *P. szetschuanica*.

Explanation of the Plates.

PLATE I. *Pedicularis diffusa* Prain.

1, Flower with bract; 2, calyx with ovary and style; 3, half of corolla showing staminal insertion; 4, stamens; 5, capsule; 6 seed: 1, 2, 3 and 5 magnified $\frac{1}{2}$; 4 and 6 magnified $\frac{1}{4}$.

PLATE II. *Pedicularis flaccida* Prain.

1, Flower with bract; 2, calyx with ovary and style; 3, half of corolla showing staminal insertion: all magnified $\frac{1}{4}$.

Some Observations of the Electrical action of Light upon Silver and its Haloid Compounds:—By Colonel J. WATERHOUSE, I. S. C., Assistant Surveyor General of India.

[Received April 20th : Read May 3rd]

In my paper on "Electro-chemical Reversals with Thio-carbamides," read at the meeting of the Society in April 1891, it was shown that the peculiar reversals of the photographic image produced by the addition of very minute quantities of a thio-carbamide, or sulpho-urea, to an eikonogen developer appeared to be connected with and accompanied by electro-chemical action, if not actually brought about by it. It was remarked also that the experiments brought forward pointed to the conclusion that, at any rate as regards the haloid salts of silver, the formation and development of the photographic image is to a very great extent influenced by electrical action, more so perhaps, than has generally been recognised, although the fact of photographic action being accompanied by electrical phenomena has been known since the earliest days of photography. It was suggested that a further investigation into the theory of photography based on electro-chemical laws, might be of value in throwing light upon much that is now obscure and uncertain as regards the formation and development of the invisible photographic image formed by the exposure to light of silver haloid compounds.

Since that time I have given a good deal of attention to the subject and tried several experiments in various ways with the object of ascertaining the electrical action of light, in connection with photography, on plates of pure silver immersed in various fluids as well as on dry plates and other forms of silver haloid compounds in ordinary photographic use. Also on the action of electrical currents in forming developable compounds of silver haloids similar to those formed by light, and, further, on the electrolysis of ordinary photographic developers and on the currents produced during the development of the photographic image. These observations are not yet sufficiently complete to found any sound deductions upon, but I hope to complete them later. In the meantime, I have thought that a short note on some observations I have lately made on the electrical action of light upon plain silver plates in various solutions, might be of interest and form a suitable introduction to any further notes on this subject I may be able to bring before you. It does not pretend to be complete or exhaustive, and can only be considered as a contribution towards a systematic investigation of the question.

A great many observations have been made from time to time of the electrical influence of light on metals immersed in water and various saline solutions, and before going further, it seems desirable to give a brief summary of these observations, and more particularly of those relating to silver and its salts.

More than half a century ago, in 1839, Edmond Becquerel was the first to show that the electrical action accompanying the chemical changes brought about by the influence of light upon various substances, including several metals and the silver haloids, could be observed with the aid of a very delicate galvanometer. He found that this action was quite independent of any calorific radiation or heating of one electrode more than another, but was powerfully affected by the different rays of the spectrum, the greatest action being produced by the violet, indigo and blue rays, while with the green, yellow and red rays there was little or no action. Becquerel's observations are fully summarized in his work, "*La Lumière, ses causes et ses effets*," Vol. II. To observe these effects he used a covered vessel divided into two parts by a thin membrane. In each of the compartments he placed a plate of platinum or gold, previously made red-hot to remove all impurities, the plates being connected with the poles of a very sensitive galvanometer, and laid horizontally in the apparatus. Each compartment had a moveable cover. He found that when the two compartments contained an alkaline solution, the plate exposed to the solar rays took negative electricity, while the reverse occurred if the solution were acid. With alterable metals, such as silver or brass, analogous effects were obtained and the electrical effect could be largely increased by giving the plates a preliminary polarisation by plunging them in water and then placing them in connection with the positive pole of a battery. When two silver plates were immersed in water acidulated with nitric acid exposure to light of one plate only produced a very weak current and the exposed plate was always positive. If the gold or platinum plates had been thoroughly cleaned, had remained in strong nitric acid and had been made red hot, the different parts of the spectrum were almost powerless to produce electric currents. With well cleaned silver plates which had been heated several times the effects were also almost *nil*, though not quite absent, and from this fact it seemed possible that when the plates were not in this state the effects produced might be due to the action of light upon corpuscles of organic matter adhering to the plates which become oxidised by the action of light, the water supplying the oxygen. If this effect did not take place and there was no alteration in the plates themselves the light must produce a disturbance of the particles, but the former supposition seemed most probable. He found that when

silver chloride, iodide or bromide, precipitated in a thin layer on a plate of platinum or gold, was exposed to light as above, the exposed plate was positive, and that the initial action was much stronger with the bromide than with the chloride; though the intensity of the currents observed was variable and depended on the thickness of the film of bromide, moreover the electrical action was soon exhausted. With the iodide the current was almost as strong as with the chloride, but did not remain constant so long.

When plates of silver were employed, instead of platinum or gold, as a support for the haloids, the effects noted were stronger and more regular, but it was found that the direction of the current depended on the thickness of the films; with thin coatings the exposed plate was positive, and with thick coatings negative. This was markedly the case with plates of silver exposed to the vapours of iodine. With vapour of bromine the exposed silver plate was negative, the initial current, even with diffused light, was very strong, but after remaining exposed to light for some minutes then protected from light and again exposed to its influence, it was found that the current was very weak. A film of silver chloride prepared by exposing a silver plate to the vapour of chlorine gave only a very weak effect, but plates coated with the violet subchloride behaved very well in these trials and yielded for a long time results from which comparisons could be made.

On the basis of these experiments Becquerel invented his electrochemical actinometer which was practically a voltaic element or cell composed of two plates of very pure silver coated usually with the violet subchloride of silver and plunged into a conducting fluid composed of two parts of monohydrated sulphuric acid in 100 parts of water. The apparatus was so arranged that all light was excluded, except from an adjustable opening on one side by which one of the plates could be exposed to light while the other remained in darkness.

When diffused daylight or sunshine acted upon one of the plates, more or less deviation of the needle was observed which remained constant so long as the light remained of the same intensity and the surface was sufficiently sensitive. If the light was shut off, the needle returned to zero or somewhat beyond it, but soon regained its original position. If the light remained of the same intensity and the plate was again exposed, the electrical effect was the same as before, always provided that the sensibility of the plate remained the same, for which purpose the sensitive coating should be sufficiently thick. Under favourable conditions the sensibility of the instrument might be preserved for a whole day and thus several consecutive observations might be made.

The deflections of the needle could not, however, be considered as

the intensity of the chemical action depended on the intensity of the light, and consequently to the active luminous intensity; they only showed whether this luminous intensity was greater or less in one direction or in another.

With his instrument Becquerel observed the effect of different rays of the spectrum on silver iodide and violet subchloride, and found that in both cases the maximum of action was in the green about D $\frac{1}{2}$ E; but while with the chloride the action decreased on both sides of this point, and ceased at A and H, with the iodide that had already been exposed there was a second maximum in the indigo blue about G $\frac{1}{2}$ H, and thence the action decreased to P in the ultra-violet. In neither case was any reversed action observed in the red rays, as observed with sensitive papers, but that might be due to the fact that in one case the sensitive surface was in water and in the other in air. Becquerel has not recorded any corresponding observations with silver bromide.

About 1840, Robert Hunt repeated Becquerel's experiments with many modifications, and the results he obtained (*Phil Mag*, XVI, 1840), completely confirmed them. More careful trials with the spectrum on plates of different metals made later showed that every ray of the spectrum produces an electrical disturbance. The rays, however, at the least refrangible end, produce a deflection of the needle in one direction, whilst the most refrangible rays set up a disturbance in an opposite direction. There are many indications of a condition analogous to polarity in the action of the prismatic rays. (*Researches on Light*, p 295) Hunt also remarks that "This action is only to be regarded as one of the evidences of chemical disturbance, exciting electrical currents, yet at the same time, it opens the question of the identity of the agent producing this disturbance and electricity."

In 1858, Grove (*Phil Mag.*, XVI, (4), p 426) recorded that he had succeeded in obtaining a deflection of the galvanometer needle by allowing a beam of light suddenly to impinge on a daguerrotype plate in a trough of water, the plate being connected with one pole of the galvanometer and a gridiron of silver wire in front of the plate with the other. In experiments with platinum plates he came to the conclusion that the action of light was always in the direction of the polarisation current, though further experiments by Becquerel and others have shown that this is not the case.

In 1863, Pacinotti found that when pairs of plates of copper, zinc, iron or lead were immersed in solutions of certain salts of the same metals, the exposed plate was always negative, but with plates of silver immersed in a solution of nitrate of silver the plate exposed to sunshine

was positive, whereas if exposed to the rays of a petroleum lamp or a heated thick iron plate it was negative, as were also the other metals. (*Cimento*, XVIII, p. 363.)

In 1875, Hankel published a series of observations on this subject (*Wied. Ann.*, I, 1877) in which he showed that the electrical behaviour of the metals under the influence of light depended very much on the condition of their surfaces; consequently, in such observations it is necessary to consider separately each state of surface. His observations were made on copper in different states, tin, brass, zinc, platinum and silver. With regard to the latter, he records that when two plates of fairly pure silver were immersed in filtered tap water, the plate exposed to the light of white clouds was negative. When the plates had been left a day in the water the rays of the setting sun still gave a pretty strong negative impulsion. Platinum plates coated with silver were slightly positive with white or blue light, while red light produced no effect. Silver plates coated with platinum, (old platinised silver battery plates) which were slightly negative when coupled in circuit with plain platinum, were found to be very sensitive to light, and the exposed plate was positive. With coloured glasses the action was strongest under blue glass, but was also quite strong under yellow and red glasses; gaslight also produced a pretty strong deviations of the galvanometer needle, and it was found that the action under dark red and blue glasses was stronger than under a light green which was much more transparent.

In 1878, Professor Dewar published a preliminary note on "Experiments in electric photometry," (*Proc. Roy. Soc.*, XXVII, 1878, p. 364) in which he dealt principally with the construction of the best form of cell for the general investigation of the electrical actions induced by light on fluid substances. He found that the list of substances that may be proved to undergo chemical decomposition by light, was very extensive, some of the most active being the ferro- and ferri-cyanides of potassium and the nitroprusside of sodium, tartrate of uranium and a mixture of selenious and sulphurous acids in presence of hydrochloric acid. The complete paper does not appear to have been published.

In 1876, M. Egoroff published a note (*Comptes Rendus, Acad. Franc.*, LXXXII, 1876) on a differential electro-actinometer for the purpose of determining the absorption of the ultra-violet rays by different media. The instrument consisted of two of Becquerel's electro-actinometers placed one above the other and arranged so that the current of one might be neutralised by the other. In some preliminary observations with iodised silver plates he found that the intensity of the current was proportional to the width of the opening through which

It was also inversely proportional to the square of the distance of the source of light from the apparatus. An oil lamp was used. The instrument appeared to show an exact proportionality between the intensity of the light and that of the current, and its great sensitiveness and precision would enable it to be used as a very delicate photometer. In these experiments he found that the electromotive force exerted by the November sun upon iodised silver plates through an opening 30 mm. wide was $\frac{1}{5}$ of a Daniell cell; with a petroleum lamp, at 8 inches distance, it was only 0.004 Daniell.

Dr. J. Moser afterwards, in 1887, in working on Egoroff's plan found that the photo-electric current might be greatly increased by treating the chlorised, iodised or bromised silver plates with solutions of erythrosin, benzo-purpurin and other dyes, and in sunlight he observed currents of a strength equal to half a volt (Eder's *Jahrbuch der Photographie*, &c., 1888, p. 297.)

At the meeting of the British Association, in 1880, Professor G. M. Minchin gave an account of his experiments on the generation of electric currents by the action of light on silver plates which were coated with emulsions of bromide, chloride, iodide and other salts of silver in gelatine and collodion, as well as with eosine, fluoresceine and various aniline dyes, the object of these experiments being the solution of the problem of producing a photographic image of an object at a distance. A detailed account of these and other interesting experiments on light-cells was read before the Physical Society and published in the *Philosophical Magazine*, for March 1891.

He found that when two pieces of clean silver foil attached to glass plates were coated with an emulsion of chloride of silver in collodion and immersed in distilled water containing a few grains of common salt, the plates being connected with the terminals of a Thomson's galvanometer and one of them screened from the light, that on exposing the unscreened plate there was an electric current produced and the exposed plate was *negative* to the unexposed. The same effect was observed with plates coated with emulsions of silver bromide in water containing a little potassium bromide. When the plates were coated with iodide of silver in collodion by the wet silver-bath method, the liquid being water containing a little potassium iodide, there was a reversal of the nature of the exposed plate, it being *positive* to the unexposed. With coloured glasses in front of the exposed plates it was found that the red rays produced comparatively feeble currents, while those produced in the blue and violet rays were very great, but the directions of the current were the same for all rays. This agrees with Becquerel's observations. With plates coated with

an emulsion of silver sulphide in potassic sulphate, the exposed plate was *positive*, the direction of the currents being the same for all rays, the strength of the current being least for the rays passing through the green glass.

With plates coated with an emulsion of silver nitrate in gelatine in a weak solution of barium nitrate the exposed plate was *positive*. The effect of the red rays was very small, and of the blue rays very great.

One of the most important points in Professor Minchin's observations is his discovery of the formation of an invisible developable deposit on silver plates coated with an emulsion of silver bromide, by the action of the electrical current from a single bichromate cell passing through the plates when immersed in water containing a little potassium bromide. He found (1) that the plate connected with the carbon pole, the cathode, was without the employment of any developer visibly blackened in its immersed part, (2) that no visible change took place on the other plate attached to the zinc, but when the plate was developed with an ordinary pyrogallie acid developer its immersed portion was also blackened. These effects were entirely due to the passage of the current and were strictly confined to those portions of the sensitive plate through which the current passed.

The special bearing of these observations upon the formation and composition of the invisible or visible developable photographic image formed by the action of light, does not appear to have been generally recognised. I began last year a series of observations on this subject which quite confirmed Professor Minchin's: unfortunately they were interrupted before completion, but I hope to resume them in due course, after the completion of the present series, and bring them before the Society on a future occasion.

Professor Minchin also found that by coating silver plates with eosine and gelatine, comparatively strong currents were obtained and the plates were very sensitive to variations in the light. The current generated by daylight in one of these eosine cells was sufficiently strong to produce the photographic action on a silver bromide plate without any preliminary exposure of the bromide plate to gaslight. He also describes a curious case of inversion of the current occurring in the eosine and other cells, which I have also noticed, the initial current being such as to make the exposed plate *positive* to the other. This current, however, was of very short duration and was succeeded by a steady and much stronger normal current in the opposite direction, the exposed plate being *negative* to the unexposed. On suddenly shutting off the light from the plate the instantaneous effect was to

interrupting the existing current, the effect being merely impulsive, after which the current generally disappeared. This cell having been kept in the dark for a fortnight, it was found that while the inverse currents were produced as before, the initial current on exposure was enormously increased in magnitude and duration. It then disappeared gradually and was succeeded by a current in the reverse direction. When one of these plates was removed from the cell and immersed in water in presence of a clean silver plate, it was at once on exposure to light negative, like a silver plate coated in the ordinary way with an emulsion of eosine. In preparing these eosine-gelatine films, it was found to be an advantage to immerse them for a few minutes in a strong solution of alum in order to prevent the dye from washing out of the film too readily.

With silver plates coated with naphthalene red and gelatine the effects were not so strong as with eosine; the exposed plate was positive and with strong red rays there appeared to be a reversal of the sign of the E. M. F.

Plates coated with iodine green and exposed to sunshine gave currents with an E. M. F. amounting to about $\frac{1}{10}$ volt.

M. F. Griveaux, experimenting on silver plates coated with a film of silver iodide, plunged into solutions of iodine of different strengths, circulating through the cell, found that the maximum value of the E. M. F. developed by light acting on one of the plates decreased as the strength of the iodine solution increased, till a certain point was reached at and above which the E. M. F. was *nil*. Also that this point was regulated by the distance of the plates from the source of light; the nearer the plates the higher the concentration point of the solution and *vice versa*. The same effects were observed with silver chloride and bromide. (*Comptes Rendus, Acad. Franc*, CVII, 1888, p. 837.)

I have entered somewhat fully into these previous experiments because very little appears to be generally known about the subject and it seemed desirable to bring together the scattered observations.

In carrying out my experiments I have used two kinds of cells, one horizontal and one vertical, more usually the latter. It consists of a glass cell in which the plates can be coupled face to face or back to back, one being screened from light by the other and by one or two interposed screens of ruby or yellow glass, the cell being covered all round except at an opening on one side. This glass cell is enclosed in a wooden box with a shutter on one side sliding in front of an opening about 1.5" x .5", corresponding to the one in the glass cell. In front of this shutter there are grooves in which coloured glasses can

be placed in front of the opening. The upper part of the wooden case is open, but can be closed by a lid, through which, if necessary, a funnel may be passed to admit of solutions being poured into the cell without letting in light. The silver plates used with this cell are 4 inches long, and $1\frac{1}{4}$ inches wide, other plates, such as photographic sensitive dry plates or celluloid films, being about the same size or smaller.

The other cell is a modification of the form used by Becquerel in his earlier experiments, and consists of a wooden trough divided into two compartments by a double wooden screen which allows the free circulation of the electrolytic fluid, while completely shutting off light from the unexposed compartment. This trough is covered with a lid, having two large openings fitted with hinged shutters, to the underside of which mirrors are attached for the purpose of reflecting light at will on to one or other of the sensitive surfaces in the compartments below. By this arrangement the whole of the sensitive plate can be exposed to light, instead of only part of it, as in the vertical cell, and at the same time the perfect protection of the unexposed plate from strong light is better secured than it is in the vertical cell. This horizontal trough is constructed to take two plates $3\frac{1}{4}'' \times 4\frac{1}{4}''$ or smaller.

In most cases, even under favourable conditions, the light-currents observed, are exceedingly weak, and therefore a very sensitive form of galvanometer is necessary. The one I have used is the latest modification of the Rosenthal micro-galvanometer made by Edelmann, in Munich. It is said to be the most sensitive form of galvanometer made, enabling currents of about a billionth of an ampère to be read with a resistance in the coils of only 1,000 ohms. It is fitted with a telescope by which direct readings are made off the mirror from a millimetre scale placed at one metre from it. In this position and without the directing magnet, using the $\frac{1}{1000}$ shunt, with a total external resistance of about 60,000 ohms in circuit, the deflection caused by one gravity-Daniell cell is one millimetre division of the scale. By using the directing magnet the normal sensitiveness of the instrument can be very greatly increased, though in most of the experiments it has been found sufficiently sensitive without the magnet, and when used, the increase of sensitiveness has been limited to about five times the normal. The instrument can be set up in any position, is simple in construction and I find it very sensitive, convenient in use and easy to observe with fair precision, considering the difficulty there is in obtaining freedom from shake and tremor in a city like Calcutta built on a bad foundation of mud. In reading the scale which is 50 centimetres long,

sub-divided into millimetres, I have usually fixed the zero point at 30, so that the readings above or below it may as far as possible show different signs of E. M. F., and the direction of the currents has been so arranged that a change in the position of the index to the apparent left from 30 to 0 shall indicate that the exposed plate is *negative* to the unexposed, as copper to zinc, while a change to the apparent right, 30 to 50, shows that it is *positive*, or as zinc to copper.

The coloured glasses used have been of the kinds ordinarily met with in the bazar. A deep ruby, a brownish yellow, a medium green, and a dark blue, and conditions being favourable it has generally been possible to observe some trace of a current even with the deep ruby in strong sunshine.

When observations were made with the spectroscope, whether with a Rowland's diffraction grating or prisms, it was found that the amount of light admitted through the slit for ordinary work, was quite inadequate, even when the slit was open at its widest; and it was therefore necessary, in most cases, to use a much wider slit, or to dispense with its use altogether; also to use the directing magnet on the galvanometer to increase the sensitiveness.

In all cases sunshine has been reflected on to the sensitive plates by means of a heliostat, as it was not convenient to use the direct rays of the sun. With the flat cell there were thus two reflections, but any loss of light was amply made up by the increased surface exposed.

As is usual in such experiments, there were almost invariably more or less strong local or polarisation currents generated between the plates themselves, especially when they were freshly immersed in the solutions, and it was generally found desirable to leave the cell from 12 to 24 hours before use, so as to give time for these currents to subside. Sometimes, however, from half an hour to an hour, or even in some cases a few minutes is sufficient. It was found, too, that even if there was no polarisation current at the commencement of an experiment, the action of light occasionally gave rise to fairly strong currents quite independent of, and sometimes opposed to, the currents produced by exposure to sunshine, while at others they were in the same direction. Thus it was sometimes difficult to ascertain how far the currents observed were due to light or to polarisation. The only test was the retrograde movement of the needle after shutting off the light.

Another difficulty in making these observations may be noted, and that is, the apparent reversals of current which are due in many cases to decrease in the strength of the light, though the decrease may be almost imperceptible. For the same reason, if coloured glasses be applied without first completely shutting off the light after the plates

have been exposed to sunshine, there is an apparent reversal due to the loss of power in the light, and not to change of direction of the E. M. F. As a rule my observations with coloured glasses or the spectrum have agreed with Becquerel's and Minchin's that no reversal of sign is produced by any of the coloured rays. At the same time, I have found that in some cases the blue rays appear to have a reversing tendency, as might be anticipated from their very strong reversing action on certain forms of sensitive photographic plates containing iodide or bromo-iodide of silver. This point, however, requires much more complete investigation with the aid of the spectroscope, and will be further considered when dealing with the silver haloids. During the time I have been engaged with these observations, the weather has been unusually changeable and cloudy for the time of year, and hence it has been difficult to compare the results of observations on different days. For this reason it has been impossible to give more than general indications of the amount of deflection caused by the action of light in the cases recorded; exact observations would have to be made with a standard light.

It seemed desirable to commence the observations with experiments on plain silver plates in different fluids. The plates used were not quite pure, having been reduced from various silver residues, and were about .974 touch. They were four inches long and one and a quarter inch wide, and were usually cleaned with fine emery powder, or with emery cloth immediately before and after use. It is, however, better to make sure of the purity and cleanliness of the surface of the plates for each operation by heating them red-hot and then immersing them in dilute sulphuric acid. As facilities for doing this with thick plates were not readily available, it has been omitted in all the following observations. As a rule, the plates were immersed in the solutions to a depth of from 2 to $2\frac{1}{2}$ inches, care being taken to avoid moistening the upper unimmersed parts by capillary action or otherwise, and so exposing them to irregular currents from this cause. The plates were about half an inch apart, being kept separated by two wooden blocks with a dark ruby glass plate between them.

I. SILVER PLATES IN WATER.

Distilled Water.

Distilled water being almost a nonconductor, the currents observed were naturally exceedingly weak and could only be clearly seen with strong sunshine. The deflection observed without the magnet varied from .5 to 3 divisions of the scale, and in nearly all cases the exposed plate was positive to the unexposed, and formed the anode or dissolving plate of the couple. In some cases the exposed plate became more

sensitive after the first exposure, but after a few exposures lost all sensitiveness. The current being so small, it was not thought necessary to experiment with coloured glass or the spectrum. With the directing magnet placed as before described the deflection was increased to about 6.5 divisions.

Tap Water.

The tap water used was the filtered Hooghly water, supplied in the town mains. It is fairly pure and free from lime salts, but chlorides are present in moderately large proportion, the amount of chlorine varying from .5 to 1.4 parts per 100,000, and at the time of the experiments it would be about 1 to 1.2 parts per 100,000. The total hardness varies from 3.15 to 11.5 parts and would be about 9 parts per 100,000 at the time of the experiments. In most of the cases observed the exposed plate was distinctly positive to the unexposed, as with distilled water; but in some cases it was negative, and in one or two instances the action was irregular. The plates were rather more sensitive than they were in distilled water, the normal deflections without the directing magnet varying from 1 to 7 divisions of the scale, but usually they were between 2 and 4.

In one case in which the plates had been in the cell for about 38 hours, and there was only a very slight cell-current, exposure to sunshine gave a deflection of + 4.5 divisions without the magnet, but with it the deflection in bright sunshine rose to + 20 divisions, and even in diffused light was + 5 divisions. Exposing under ruby glass gave a deflection of + .5; yellow glass + .7; green glass + 1; blue glass + .5 in diffused light, and + 7.5 in sunshine. Trials were also made with the grating spectroscope without the directing magnet, but the results were not conclusive and the unsettled weather, has, so far, prevented their being repeated with the galvanometer in its most sensitive state. The plates were found very sensitive to changes in the strength of the light, but after repeated exposure to sunshine they seemed to lose sensitiveness. By the action of the water a greyish deposit of chloride was formed and in some cases a darkened image of the exposed part of the plate could be seen. It may be noted that my experience does not agree generally with that of Hankel, who found that, of two silver plates immersed in water the plate exposed to white clouds, or to the setting sun, was negative. I find, however, that on one occasion when fresh plates were exposed to daylight, the exposed plate was negative, the deflection being about - 1.5 divisions of the scale. On again exposing the same plates to sunshine the exposed plate was positive, and remained so afterwards on further exposure. On two other occasions of expo-

sure to daylight, the exposed plate was also negative. When exposed to sunshine the plates were almost invariably positive. I have noticed this difference with plates in other solutions.

II. SILVER PLATES IN DILUTE ACIDS.

As we have seen above, Becquerel found that with plates of gold or platinum, immersed in acid solutions, the plate exposed to the light was always positive. The same rule seems to apply to silver plates in most cases, but not in all.

Dilute Sulphuric Acid.

The action of dilute sulphuric acid upon silver plates under the influence of light seems to be rather irregular, but I find on looking through all the experiments made, that in nearly all cases the first exposed plate of each pair had a negative tendency when first exposed, though it might become positive by subsequent exposures and in the same way the second plate of the pair, which was screened during the first exposure, might also be positive on first exposure. The general tendency was undoubtedly positive. The irregularities may be partly due to the plates not being quite pure. *

With silver plates immersed in distilled water acidified with about a drop of acid in some 60 cc. of water, the exposed plate was generally positive when exposed to bright sunlight, the deflection without the directing magnet varying from 1 to 4.5 divisions of the scale, sometimes increasing after repeated exposures. In one experiment, however, the exposed plate was distinctly and uniformly negative, even after the position of the plates had been reversed, but subsequent exposure of the reversed plate made it positive. In another it was negative on first exposure and then positive.

With a pair of plates in tap water, acidified in the same way, the plate exposed to sunshine was first negative with a deflection of -3 divisions on the scale, which increased to -6 divisions by subsequent exposures. Exposure under coloured glasses also gave a negative deflection, amounting with red glass to -1, with yellow and green glasses to -2; with blue glass to -5, and exposed to sunshine again -6, as before. The same plates being again exposed to sunshine later on were also negative at first, but became positive and much more sensitive. Under coloured glasses the deflections were also positive and very much larger than on the first exposure of the plate. After reversal, so that the former unexposed plate became the exposed plate, the deflection was again negative, amounting to -7 divisions, and increasing with the exposure. These plates were very sensitive to changes in

light, and there was a perceptible deposit of chloride (?) on their immersed surfaces.

With plates immersed in a 1 per cent. solution of sulphuric acid in distilled water, it was found that if the plates were exposed to sunshine a very short time after being immersed in the dilute acid, they were at first negative and fairly sensitive to light but afterwards became positive; whereas in a case when the plates were left standing for 24 hours to reduce the polarisation, they were positive, and much less sensitive than the plates which were negative. After a short time they seemed to lose all sensitiveness.

In tap water containing the same proportion of acid, the exposed plates were generally positive on opening the shutter; but the current quickly decreased, and with some plates after several exposures they gave a negative deflection.

With plates immersed in distilled water containing two per cent. of acid the deflections were usually positive and the plates seemed to become less sensitive by repeated exposure and by keeping.

With plates immersed in dilute acid at 5 per cent., which had been allowed to stand for 24 hours, and showed a very small cell-current, the first plate of the pair was distinctly negative when exposed, the deflection being -4 , decreasing with exposure to -2 , but the second plate when exposed after reversal of the plates in the cell was positive with a deflection of $+6$. Two other pairs of plates in freshly-mixed acid were positive on first and subsequent exposures. The addition of acid lowered the sensitiveness of the plates considerably.

All the plates showed a slight grey deposit or stain on the immersed ends, but no trace of an image.

Dilute Nitric Acid.

With nitric acid the exposed plates are nearly always positive and the action is far more uniform than with sulphuric acid, especially when an appreciable quantity of acid, as one per cent. and over, is used. Becquerel also found the exposed silver plate positive in dilute nitric acid.

With distilled water acidified with about 1 drop of acid in 70 cc., the exposed plate was positive on first exposure, but afterwards became negative. The plates were not very sensitive, the deflections without the directing magnet varying from 1 to 3 divisions of the scale.

With 1 per cent. of nitric acid, *sp. g.* 1.250, in distilled water, after 14 hours standing, the exposed plate was uniformly positive, and more sensitive than with the acidulated water, the deflections in sunshine being from 3.5 to 5.5 divisions, without the directing magnet. There

was a slight greyish deposit on the plates, but no image on the exposed part.

With three per cent. of the same acid in distilled water, after 22 hours standing, the first plate exposed in weak sunshine first showed a negative deflection of 2 divisions, and after that was positive, the deflection of repeated exposures being steadily about + 5 divisions, without the magnet. With the directing magnet, the deflection was about + 20 divisions with the 100 ohm, or $\frac{1}{10}$, shunt.

After the experiment the solution was found to contain silver.

Dilute Phosphoric Acid.

With dilute phosphoric acid the deflections were almost always positive. Plates freshly immersed in a mixture containing 1 per cent. of the acid, sp.g. 1.750, in distilled water and exposed to sunshine, gave an initial deflection, without the magnet, of + 23 divisions, but this quickly decreased with further exposure. After shutting off the light, the cell-current was found to have increased, and on again opening to sunshine the deflection seemed slightly negative, but the action generally was irregular. Subsequent exposures with the same cells or after the plates had been reversed showed positive deflection and the plates were less sensitive than at first.

With the same acid at 5 per cent. the deflections were uniformly positive. With plates exposed to sunshine after 16 hours, the deflection without the magnet was + 8 divisions, but, as in the former case, it was less on subsequent exposure. The same decrease of sensitiveness after exposure was noticed with the plates after reversal in the cell.

Dilute Hydrochloric Acid.

With 1 per cent. of hydrochloric acid, sp. g. 1.150, in distilled water, the exposed plates have shewn themselves uniformly positive, and owing to the formation of a deposit of chloride they are much more sensitive to light, than are plates immersed in acids which do not form a sensitive compound with the silver. The deflections with sunshine, without the directing magnet, were from + 6 or + 7, when the plates were first exposed, to + 36, when they had been kept for some hours longer and then exposed. The plates were covered with a greyish deposit of chloride on the immersed parts, and there was a distinct darkened image on the part of the plate exposed to light. Coloured glasses all gave positive deflections, the red being the smallest, and then the green.

With 3 per cent. acid, after 22 hours resting, the plates exposed to sunshine were positive. The increase of acid seemed to reduce the sen-

sensitivity very much, the highest deflection in sunshine, without the directing magnet, being + 16, while after the plates had stood for 37 hours it was only + 11.

There was a dark grey deposit of chloride on the immersed parts of the plates, which took a violet or purple colour on exposure to light, and gave off an odour of chlorine.

Dilute Hydrobromic Acid.

With dilute hydrobromic acid containing 10 cc. of the ordinary pharmaceutical dilute acid, of 10 per cent., to 100 cc. distilled water, the plate exposed to sunshine or diffused daylight was uniformly *negative* and extremely sensitive to light, the first deflection in bright sunshine being about - 187 divisions, without the directing magnet, decreasing to a steady reading of about 140 divisions. Even coloured glasses gave fairly large deflections; red, - 13; yellow, - 54; green, - 64; blue, - 103.

With dilute acid of double the above strength, the exposed plate was also uniformly negative, but the plates did not seem so sensitive, the deflection in sunshine, without the magnet, being only - 82; but the readings depend very much on the strength of the light, and this was variable at the time of observing.

In both these cases the plates were coated with a grey-greenish-yellow deposit of bromide, which turned dark on exposure, and formed a visible image of the exposed part of the plate.

Dilute Hydriodic Acid.

As pure hydriodic acid is somewhat troublesome to prepare, I roughly made up a solution of it by precipitating one gramme of barium iodide, dissolved in water, with sulphuric acid and adding water to make up 100 c.c. There was, however, a considerable quantity of free iodine present, the solution being of a light sherry colour.

The cell containing two clean silver plates immersed in this solution was left standing for 15 hours. The plate exposed to sunshine was then found strongly negative, the deflection, without the directing magnet, being - 110 divisions of the scale, afterwards going up to - 130 divisions. The plate was, very insensitive to weak daylight, the reading being only 12 divisions when the sun was hidden behind clouds. With coloured glasses fairly large deflections were obtained, always in the same negative direction; red glass giving - 15 with daylight, and - 16 with sunlight; yellow - 16.5 with daylight, and - 20 with sun; green - 14 with daylight, and - 19 with sun; blue - 16 with daylight, and - 30 with sun. By keeping, the plates

became less sensitive. They were covered with a strong loose deposit of iodide, under which the silver surface was darkened. A faint image of the exposed part was visible.

Dilute Glacial Acetic Acid.

With plates freshly immersed in dilute glacial acetic acid of 1 per cent., the plate exposed to sunshine was positive, the deflection being about + 6.5 divisions, without the magnet; a second exposure gave a deflection of + 8.3 divisions. By keeping for 24 hours the plates were less sensitive, but remained positive.

Plates immersed in dilute acid of 5 per cent. and kept 24 hours before exposure were less sensitive than the above, the deflection with sunshine being only + 3 divisions without the magnet, and they became less sensitive by further exposure, but were always positive.

Dilute Formic Acid.

The only other organic acid I have yet tried is formic acid, one per cent. in distilled water. After the cell had been standing 24 hours, exposure to sunshine gave a deflection amounting to about 8 divisions, the exposed plate being positive. The same plates after another 24 hours standing were found to have become very insensitive, the deflection being only one or two divisions of the scale, the exposed plate still being positive.

III. SILVER PLATES IN ALKALINE SOLUTIONS.

Becquerel found that when platinum or gold plates were immersed in alkaline solutions, the plate exposed to light was negative. So far as my experience goes, this rule does not hold good with silver, the sign of the exposed plate being almost always positive. I have not tried these solutions very thoroughly, but the results obtained with potash and other salts used seem conclusive.

Solution of Potassium Hydroxide.

With a solution of one per cent. of caustic potash in distilled water, the cell having been standing 22 hours, the cell current was *nil*.

Exposure to bright sunshine gave a deflection of about 9.5 divisions without the magnet, the exposed plate being positive. With the magnet the deflection was about + 45 divisions in sunshine, and + 9 divisions in daylight. With sunshine under blue glass the deflection, with the magnet, was + 31; under green + 9; yellow + 8; red + 4.5. There was no deposit on the plates and no image of the exposed parts.

Solution of Potassium Carbonate.

With a solution of one per cent. of anhydrous potassium carbonate, the cell having been standing for about 14 or 15 hours, the cell-current was very small, and the plate exposed to light, either daylight or sunshine, was found to be positive, the deflection in the former case being + 22, and in the latter + 63.5, without the magnet.

With tap water made alkaline with a few drops of ten per cent. solution of the carbonate in about 60 c. c. of water, the exposed plates were also positive and very sensitive on first exposure, but the current decreased with further action of light, and in subsequent exposures the plates were less sensitive to light. They also lost sensitiveness by being kept in the cell.

Solutions of Sodium Carbonate.

With silver plates exposed shortly after immersion in 1 per cent. solution of anhydrous sodium carbonate in distilled water, the plate exposed to sunshine was positive, the deflection being about + 5 divisions without the magnet. In subsequent exposures the plates were less sensitive, but remained positive.

With a stronger solution, at 5 per cent., the results were similar, but the plates seemed somewhat more sensitive.

Solution of Lithium Carbonate.

With plates exposed shortly after immersion in a 1 per cent. solution of lithium carbonate in distilled water, the plate exposed to sunshine was positive, the deflection being about + 6 divisions without the magnet. The plates lost sensitiveness after the first exposure as well as by keeping for 34 hours, but remained positive.

Dilute Solution of Ammonia.

With a solution of 4 c. c. of strong liquid ammonia in 100 c. c. distilled water, the cell having been left standing some 14 or 15 hours, the plates were found to be exceedingly insensitive to light; even with the magnet the deflections in sunshine were only about 2 divisions, the exposed plates being positive.

Another pair of plates immersed in a freshly-mixed solution, containing 2 c. c. of liquid ammonia in 100 c. c. of water, and exposed soon after immersion, were also found insensitive, but not so much so as the last; the deflection on first exposure in sunshine being about 3 divisions, without the magnet. The current, however, decreased on further exposure, and the same effect was observed in subsequent exposures. After a short time no current was perceptible.

The immersed parts of the plates showed no deposit.

Potassium Cyanide.

With a solution of potassium cyanide in distilled water, about 1 per cent., there was a strong negative polarisation current in the cell when first prepared, which took several hours to subside. When freshly immersed the exposed plate was negative, but not very sensitive, the deflection without the magnet being only - 4 divisions for sunlight. By keeping the cell 24 hours the polarisation current subsided entirely, and the plate exposed to sunshine was again negative with a deflection of - 3.5 divisions. A slight movement of the cell, however, seemed to cause a reversal of the current with a deflection of + 6.5 divisions which further continued for another 6.5 divisions after the light had been shut off. The same effect was observed on subsequent exposures, first the plate was negative then positive, while the polarisation current increased in the same direction. After a time the plate seemed to become quite insensitive to light.

With the same plates reversed there was again a very large initial negative polarisation current. On first exposure of a plate to sunshine the deflection was - 14.4 divisions, without the magnet. On shutting off the light, the negative polarisation current was found to have very largely increased. On second exposure the plate was first negative and then positive. On shutting off the light the current continued + 2.5 divisions in the same direction and then turned back in its original direction. The plates were coated with a dark grey deposit, thicker at the upper part of the plates than at the lower. About the immersion line there was a yellowish-white deposit, and the plates were deeply corroded, but no sign of an image of the exposed part was visible.

From the above experiments it would appear that as a general rule sunlight has an oxidising or dissolving effect on silver, whether in acid or alkaline solutions, the exposed plates being nearly always positive and consequently forming the anode of the voltaic couple. With solutions decomposed by silver and forming sensitive compounds the action is variable.

IV. PLAIN SILVER PLATES DRY.

When a comparatively large silver plate about 5 x 4 inches, not immersed in any solution, but with its ends connected by silver bands to the terminals of the galvanometer, the directing magnet being specially placed so as to increase the normal sensitiveness about 13 times, was exposed to light so that the upper half remained unexposed, it was found possible to detect a slight current between the exposed and unexposed halves of the plate; the exposed half being positive to the unexposed. With an uncleaned plate that had lain in a drawer for

some months, the deflection in sunshine was fairly large, amounting to about 10 divisions, or rather more than the deflection caused by the contact of dry zinc and copper. When, however, the same plate had been carefully cleaned with a solution of cyanide of potassium followed by the usual rubbing with emery cloth, the deflection was found to be still positive, but much smaller, being only about 1·5 divisions on first exposure, and by repeated exposure it was reduced to about '25 division.

With subsequent exposures the deflection was generally in the same direction, but once, after fresh cleaning, it was negative. With a plate of pure silver deposited on glass, freshly polished, the first exposure gave after a short interval, a fairly strong negative deflection, but with subsequent exposures at intervals the deflections have been sometimes negative and sometimes positive, but always very small, so that the observations are somewhat uncertain. Plates of almost perfectly pure silver, 999·5 touch, obtained through the kindness of the Mint Master, Lt. Col. Baird, R. E., F. R. S., gave also rather indefinite results, owing to the smallness of the currents, and though the deflections were generally positive on first exposure of the plates, they were sometimes negative, or became so by prolonged exposure. The general tendency, however, appeared for the plates to be positive under the influence of light, and, if this is the case it would seem to point to some slight oxidising action on the surface. At the same time, the results obtained with *pure* silver and the fact that in so many cases the deflections have been first positive and then negative, appear to favour the conclusion that such plates are really negative. It was clearly ascertained that the currents produced were not due to the action of heat, because with the plate first observed and with the purest silver plates, the action of heat applied at the exposed end of the plate was to give a positive deflection, but with the less pure silver plates used in the cells and others largely alloyed with copper, the heated end of the plate was always negative to the cool end. The deflection invariably increased with the continuance of the heating, and was always in the same direction on repetition of it.

The light currents, on the other hand, showed a decrease of deflection from repeated exposures and sometimes a change of sign in a direction contrary to the heat currents shown by the same plates. The observation is rather a difficult one and requires further repetition under more favourable conditions of light, in order to obtain definite results.

I have also tried the effect of solutions of alkaline haloid salts upon silver plates, but as this paper is already beyond the usual limits, it may be well to defer the account of these and other experiments on photographic plates containing the haloid salts of silver to a future paper.

Noviciæ Indiæ VI. A review of the genus *Colquhounia*.—By D. PRAIN.

[Read May 3rd.]

Writing in 1885 (*Flora of British India*, iv, 674) Sir Joseph Hooker had to say of this genus:—"I am quite unable to distinguish the first three species,* or to reconcile their specimens, descriptions and published drawings with one another." And in 1890, when engaged in arranging the Calcutta Herbarium material of the natural order LABIATÆ to which the genus belongs,† the writer, after considerable study came to the same conclusion. Since then, however, the opening up of the hill-country to the east of the Irrawaddy has enabled the Calcutta Herbarium to send native collectors into hitherto unknown portions of the Shan Hills. One result has been the communication of suites of specimens that have helped to clear up some of the doubtful points. Briefly stated, the result of a renewed study has been that there seems to be no necessity for recognising more than two species in the genus; both these species are, however, very variable, and include between them seven more or less distinguishable and definable forms. The present paper consists of a short bibliographical review of these with diagnoses of all of them, and with an account of their distribution appended.

The genus COLQUHOUNIA was founded by Wallich in 1822,‡ on specimens collected by himself in Nepal, in honour of his friend Sir Robert Colquhoun, Bart., of the H. C.'s service. His diagnosis, and voluminous description of *Colquhounia coccinea*, the species then proposed, he republished, practically unaltered, two years later,§ giving at the same time a coloured plate which represents however, not the typical plant originally described, but a variety with smaller flowers. In a note at the end of this second description, Wallich distinguishes by name and by a general diagnosis a second species, *C. vestita*. This, he says, comes from various localities in Nepal, at a higher elevation than the stations for *C. coccinea*, and occurs also in Kamaon. He says that *C. vestita* flowers in the height of the rains, *C. coccinea* at the end of the rains and in the cold weather; the main distinction given, however, is one of tomentum; this is described as being in *C. coccinea* scaly-stellate, rusty, dense and friable, in *C. vestita* soft, white, thick and separable.|| The flower-spikes and flowers are admitted to be similar; plainly therefore the distinction is not a far-reaching one.

* *Colquhounia coccinea* Wall, *C. vestita* Wall., *C. elegans* Wall.

† Journ. As. Soc. Bengal, lix, 2, 294.

‡ Trans. Linn. Soc., xiii, 608.

§ Tent. Flor. Nap., i, 12 t. 6.

|| Tent. Flor. Nap., i, 14.

The LABIATE of the H. E. I. Company's Herbarium were distributed by Wallich in 1829;* Bentham, who revised for Wallich the naming of this particular order, treated these two species somewhat differently. In *C. coccinea* he recognized three distinct forms:—†

- (1). *C. coccinea* proper; the pink-flowered plant originally described in *Trans. Linn. Soc.*, and re-described in *Tent. Flor. Nap.*
- (2). VAR. β . *major* Benth.; the Nepalese plant from higher levels and with denser tomentum, treated by Wallich as identical with the plant from Kumaon that he distinguished specifically from *C. coccinea*.
- (3). VAR. γ . *parviflora* Benth.; an orange-flowered plant, not clearly differentiated by Wallich in either of his descriptions, but figured by him in the *Tentamen* as typical *C. coccinea*.

On the other hand the name *C. vestita* was strictly limited to the plant from Kumaon already referred to, which had been communicated to Wallich by Blinkworth,‡ and a new species from Burma, *C. elegans*, was for the first time mentioned.§ In the same year Bentham in another place defined the genus, mentioning all three species, but not there distinguishing the varieties of *C. coccinea*.||

In 1832 Wallich again dealt with these *Colquhounias*, figuring both *C. vestita* and *C. elegans*.¶ He diagnosed *C. vestita* from *C. coccinea* by its "ovate-oblong much attenuate acuminate leaves, very densely hoary tomentose below, as are the branches," adding that this character comprises all the points in which *C. vestita* differs from *C. coccinea*. From the original specimens it is evident that this figure of *C. vestita* was taken from one of Blinkworth's Kumaon specimens; Wallich did not however adopt Bentham's limitation of *C. vestita* to that locality, for he replaced in the species the Nepalese plant that forms Bentham's *C. coccinea* VAR. *major*. In immediate sequence come the definition and figure of *C. elegans*, the Burmese species; of this he mentions having only seen one shrub; the best distinction, Wallich says, between this and *C. coccinea*, which it much resembles, is the colour of the flowers—orange, dotted with crimson specks, instead of red. The plant is described as having leaves very softly tomentose on both surfaces, an idea

* *Lith. Cat.* n. 2084—6.

† *Wall. Lith. Cat.* n. 2085/1, 2085/ β , 2085/ γ .

‡ *Wall. Lith. Cat.* n. 2086.

§ *Wall. Lith. Cat.* n. 2084.

|| *Bentham, Synops. Labiat. in Bot. Rey.*, xv, sub 1292.

¶ *Plant. As. Bar.*, iii, 43, tt. 267, 268.

by no means conveyed by the figure, which represents a plant that, as Sir Joseph Hooker says,* cannot be distinguished from *C. coccinea* VAR. *parviflora*. These two plants are however remarkably dissimilar in tomentum, the hairs being stellate in VAR. *parviflora*, as they are in all the other forms of *C. coccinea*, but simple in *C. elegans*. As regards the degree of tomentum of *C. elegans* it is the description that is accurate, the figure that is misleading.

In 1834 Benthams again dealt with the genus†, and on this occasion still confined *C. vestita* to the Kamaon plant of Blinkworth, though in *C. coccinea* he now recognized only two forms:—

- (1). *C. coccinea* proper, which now includes the original plant described by Wallich, as well as the Nepalese portion of Wallich's *C. vestita*; this variety therefore now includes the original *C. coccinea* and Benthams own *C. coccinea* VAR. *major*.
- (2). VAR. *β. parviflora* Benth., which is the same as the plant so named in 1829.

The Burmese *C. elegans* is defined in the Wallichian sense.

In 1848 Benthams‡ followed in the main his treatment of 1834, but as regards *C. coccinea* confined the Wallichian number 2085 to VAR. *parviflora* alone, although, as we have just seen, this number applies in the *Catalogue* to every specimen of *Colquhounia* collected in Nepal. Under *C. vestita* also Benthams diverged somewhat from his previous treatment by admitting into the species a plant sent by Griffith from Assam. This is, however, a plant that must be kept specifically apart from *C. vestita* if *C. vestita* deserves to be held specifically distinct from *C. coccinea*; while, even if *C. vestita* and *C. coccinea* be conspecific, this Assam plant is still varietally distinct from both.

In 1850 Sir William Hooker figured§ as *C. coccinea* a plant raised at Kew from seed sent by Wallich from Nepal. This is the plant originally figured by Wallich in the *Tentamen*, and therefore is not exactly the one originally described by him there and in the Linnean Society's *Transactions*; it is not typical *C. coccinea*, but is Benthams *C. coccinea* VAR. *parviflora*.

In 1851 Schlechtendal described|| as *C. mollis* a plant whose origin he was unable precisely to trace. His description is, however, so full

* *Flora of British India*, iv, 674.

† *Labiata. Gen. & Sp.* 644.

‡ *DC. Prodr.*, ii, 457.

§ *Bot. Mag.*, lxxvi, t. 4514.

|| *Linnaea*, viii, 681.

and clear as to leave no room for doubt that his plant is identical with the Assam one referred by Benthams to *C. vestita*.*

In 1873 Houliet figured as *C. tomentosa*† what appears to be the same plant.

In 1876 Benthams and Hooker speak of the possible existence of a fourth species‡; it is not clear whether by this fourth species be meant Schlechtendal's *C. mollis*, which is cited indirectly through a reference in Walpers; or a Burmese plant collected by Mason, Parish, Anderson and Kurz since published as *C. tenuiflora* Hook. f.§ but which in 1877 Kurz|| described as *C. elegans*. Kurz wrote under the disadvantage of only knowing Wallich's plant from the figure which Wallich gives of it; that figure, as has already been said, is quite misleading.

The next account to be noticed is the most important of all—that by Sir Joseph Hooker in the *Flora of British India*. Here four species are described:—

1. *C. coccinea* Wall.; with Benthams's var. *parviflora* excluded.
2. *C. vestita* Wall.; limited, in the sense adopted by Benthams in 1848, to the Kumaon plant of Wallich and the Griffithian plant from Assam,¶—the Nepal plant originally included in *C. vestita* being excluded and Schlechtendal's *C. mollis* not being referred to; the identity of *C. vestita* as a whole with typical *C. coccinea* is suggested.
3. *C. elegans* Wall.; limited to the original Wallichian plant from the Taong DOUNG Mts; its identity with *C. coccinea* var. *parviflora* Benth., is suggested.

* There are two minor references to the genus by Walpers, *Annales* iii, 363 (1852) where he mentions *C. coccinea*; and *Annales* v, 689 (1858) where he gives Schlechtendal's diagnosis of *C. mollis*: this last reference is cited in the *Genera Plantarum* though the original description in *Linnaea* is not.

† Houliet, *Rev. Hortic.* (1873) p. 131. It should, however, be pointed out that Sir Joseph Hooker does not agree with the writer's view in this respect. He refers Houliet's plant to *C. coccinea* (and it may be that form of *C. coccinea* called by Benthams var. *major*); Griffith's plant is referred in the *F. B. I.*—as Benthams referred it—to *C. vestita*; *C. mollis* is not quoted in Sir Joseph's article.

‡ *Genera Plantarum*, ii, 1208.

§ *Flor. Brit. Ind.*, iv., 674. This form—apparently more common than true *C. elegans*—extends from Tenasserim to Yunnan. In the Calcutta Herbarium it is in evidence that at one time Kurz thought this distinct from the *C. elegans* of Wallich's description—of which he had no specimen—and proposed naming it *C. mur-tabanica*. Later, he decided that it must be the *C. elegans*, of Wallich's figure, which it resembles, as to tomentum, rather more closely than the true plant does.

|| *For. Flor. Brit. Burma*, ii, 278.

¶ In Mr. C. B. Clarke's Herbarium this Assam plant is distinguished from the Kumaon *C. vestita* proper, as *C. vestita* var. *rugosa* C. B. Clarke MSS.

4. *C. tenuiflora* Hook. f.; the new species referred to above.

Two more recent references to the genus have now to be noticed.

Mr. Hemsley in his *Index Sinensis** mentions one species; this he identifies, though rather doubtfully, with *C. coccinea*. The plant comes from Hupeh, South China, and the same form has more recently been collected in the Kya Valley, Upper Burma, by Genl. Gatacre. It is not *C. coccinea*, but is much more nearly allied to *C. elegans*; though a very distinct form, it is probably quite sufficiently differentiated if treated as a variety of the last named species.

Sir Henry Collett and Mr. Hemsley in a paper *On a Collection of plants from Upper Burma and the Shan States*† mention two species:—

1. *C. elegans* Wall.; the true Wallichian plant, never met with since it was collected by Wallich till it was obtained in 1887 by Genl. Collett, who speaks of it as certainly the most beautiful *Labiata* of the Shan Hills. Like *C. coccinea* VAR. *mollis* (*C. mollis* Schlecht.) this is always an erect shrub;‡ as regards colour of flowers there are two distinct forms, one with pale salmon-coloured, the other with dark red corollas.
2. *C. vestita* Benth., not of Wallich; not the true Wallichian plant, but Schlechtendal's *C. mollis*, Mr. Clarke's *C. vestita* VAR. *rugosa*.

The generic descriptions given by Wallich, Bentham, Schlechtendal and Hooker are so accurate and full that nothing can be added to them, and little is necessary beyond providing brief diagnoses of the various forms met with in the genus. Of these last there are altogether seven, and though in this paper they are treated as only of varietal rank, it may well be that other writers will find it necessary to consider them distinct species; indeed, as species at present go in the natural order LABIATÆ, it cannot be denied that forms so very distinct as the real *C. vestita* of Kamaon and as Hooker's *C. tenuiflora* are well entitled to the higher ranks. But what has to be pointed out very distinctly is that on those who may feel compelled to give this higher rank to these species of Wallich and of Hooker, it will be incumbent to recognise also

* *Journ. Linn. Soc.*, xxvi, 299 (1890.)

† *Journ. Linn. Soc.*, xxviii, 1-150 (1890),

‡ Genl. Collett remarks (*Journ. Linn. Soc.* xxviii, 8) on the discrepancy between this fact and the definition by Kurz (*For. Flor. Brit. Burma*, ii, 278) of *C. elegans* as 'a scandent or half-scandent shrub.' Kurz's definition however does not in the least refer to Wallich's original plant but to that other form collected by himself in Pegu, named by Sir Joseph Hooker *C. tenuiflora*, which is always a scandent plant.

Schlechtendal's *C. mollis*, and to give specific rank to that very distinct new form collected in Northern Burma by Gatacre and in South China by Henry.

It is remarkable that the character from tomentum which has been mainly relied upon—and with rather unsatisfactory results—in diagnosing the various species, should still prove the most effective and reliable. It has, however, to be noted that hitherto only the degree of tomentum and not its nature has been referred to, the difference between the simple hairs of the *C. elegans* series and the stellate hairs of the *C. coccinea* series of forms having been overlooked.*

COLQUHOUNIA WALL.

NAT. ORD. LABIATAE.

Tribe. STACHYDEAE.

Tall, robust, rambling herbs with rounded branches. *Leaves* ovate, margins dentate or crenate, petioled, acute or acuminate, base cuneate, rarely truncate or cordate, tomentose, as are the branches, with stellate or simple hairs. *Whorls* axillary, or in dense or lax-flowered spikes or racemes, of pink, orange, or scarlet, concolorous or spotted flowers. *Calyx* distinctly 10-nerved, equally 5-toothed, throat naked. *Corolla* tube incurved not annulate, throat inflated; galea entire or more rarely notched, shorter than the almost equally 3-lobed lower-lip. *Stamens* 4, ascending under the upper lip, the lower pair longer; anthers conniving in pairs, the cells divaricate, confluent. *Disc* equal; *style* shortly 2-fid with subequal lobes. *Nutlets* oblong, compressed, with the tip produced as a submembranous wing.

1. COLQUHOUNIA COCCINEA Wall., *ampl.*

Tomentum of stellate hairs on stems and leaves; hairs on the corolla many-celled, glandular at the tip; wings of nutlets sub-laciniate, not longer than body of nut; calyx teeth triangular.

HIMALAYA: INDO-CHINA.

VAR. *a. typica*; leaves dentate-crenate, tomentum white, usually sparse, ultimately almost disappearing; flowers large, pink or red. *C. coccinea* Wall., Trans. Linn. Soc., xiii, 608 (1822); Tent. Flor. Nap., i., 13, *fig. excl.* (1824); Cat. n. 2085/1 (1829); Benth., Bot. Reg., xv., sub 1292 (1829); Lab. Gen. & Sp. 644 (1834); DC. Prodr., xii, 457 (1848); Walp., Ann., iii, 268 (1852); Hook. f., Flor.

* The co-ordinate difference in the nature of the glandular hairs on the corolla, which is as striking, was pointed out to the writer by his friend Mr. Brühl, who kindly went over the forms after they had been sorted out.

Brit. Ind., iv, 674 (1885). *C. coccinea* var. *β. major* Benth. in Wall. Cat. n. 2085/β (1829). *C. vestita* Wall., Tent. Flor. Nap., i, 14, (1829), and Pl. As. Rar., iii, 43 (1832), in part and excluding the Kamaon locality and the figure.

NEPAL; on Gossain Than, Wallich! Scully! and Sheopore, Wallich! SIKKIM: Jongri, King's collector! and Lachen, Hooker! G. Gammie! KHASIA: Mairung, Hooker and Thomson! Mann!

A shrub 8–10 feet high, erect when standing alone but of sprawling habit and semi-scandent when growing with other species. In the form originally issued as var. *β. major* Benth., the tomentum is white as in *C. vestita*, and unusually dense, while the flowers are generally of a rather paler pink than in the specimens originally intended as typical, where the leaves are often ultimately quite glabrous from an initial rusty pubescence, and the flowers are dark red. Both forms have, however, similarly shaped dentate-crenate leaves, and in both the wings of the nutlets are nearly as long as the body of the nut. These are the forms to which, in spite of his figure, it would be necessary to restrict Wallich's name *C. coccinea*, if *C. vestita* and the others are distinct species.

var. *β. vestita* Prain; leaves (sometimes cordate at the base) crenate, crenations large, tomentum dense, floccose, white, separating in patches but not disappearing completely; flowers large pink. *C. vestita* Wall., Tent. Flor. Nap., i, 14 (1824) in part, the Kamaon plant only; Pl. As. Rar., iii, 43, t. 267 (1832) as to fig.; Wall., Cat. n. 2086 (1829): Benth., Bot. Reg., xv, sub 1292 (1829); Lab. Gen. & Sp. 644 (1834); DC. Prodr., xii, 457 (1848) excl. the Assam plant: Hook. f., Flor., Brit. Ind., iv, 674 (1885) the Kamaon plant only.

KAMAON; Srinagar, Blinkworth! Naini Tal, Anderson! Mussoorie, King! Kali valley, Duthie n. 3308! CHUMBI; at Tak-Chang, King's collector!

Like the preceding this is according to circumstances erect or semi-scandent. The flowers are pale red as in *C. coccinea* *β. major*, where also the tomentum is white. The leaves, however, (which in *C. vestita* are crenate, none of the crenations being sharp pointed) enable us to distinguish easily the two forms. The gathering from Chumbi has the thinner tomentum of *C. coccinea* *β. major*, but the leaf-margins are crenate not serrate; it thus serves to connect *C. coccinea* with *C. vestita*.

var. *γ. parviflora* Benth.; leaves and flowers smaller than in the type, tomentum rusty, flowers orange or golden yellow, with orange red lobes. *C. coccinea* Wall., Tent. Flor. Nap., i, t. 6 (1824) the fig. only; Hook., Bot. Mag. t. 4514 (1850). *C. coccinea* var. *parviflora* Benth. in Wall., Cat. n. 2085/γ.

(1829); Lab. Gen. & Sp. 644 (1834); DC. Prodr., xii, 457 (1848).

NEPAL; on Sheopore, Wallich!

Scandent; this variety is represented only by specimens collected by Wallich; the leaves have larger teeth and somewhat resemble those of *C. elegans*, which is however always a shrub. It is quite as entitled to specific rank as is *C. vestita*; if treated as a species it ought to be known as *C. parviflora*.

VAR. *δ. mollis* Prain; leaves crenate, crenations very small, tomentum dense, rusty, permanent; flowers large, orange or red. *C. mollis* Schlecht., Linnæa, viii, 681 (1851); Walp., Ann., v, 689 (1858). *C. tomentosa* Houlet, Rev. Hort., (1873), 131. *C. vestita* Benth., DC. Prodr., xii, 457 (1848) not of Wall., the Assam plant only; Hook. f., Flor. Brit. Ind., iv, 674 (1885) excluding the Kamaon plant; not of Wall.: Collett & Hemsley, Journ. Linn. Soc. xxviii, 116 (1890); not of Wall., *C. vestita* var. *rugosa* C. B. Clarke Mss.

SIKKIM; Balasun, King's collector! BOOTAN; Griffith! MISHMI; Griffith n. 4028 (Kew Dist.)! KHASIA; Mairang, Simons! Oldham! Clarke n. 16138! Shillong, Mann! Collett! Dingling, Clarke n. 5900! Cherra, Hooker and Thomson! Clarke n. 5322! MANIPUR; Kassone, Watt n. 5123! BURMA; Shan hills at Pwehla, Collett!

An extremely distinct form, always a shrub, and easily recognised by its stout virgate habit and by its nutlets with very short wings. This might be still considered specifically distinct even if *C. vestita* were merged in *C. coccinea*, and if looked upon as a good species it ought to bear the name *C. mollis* Schlecht. The leaves differ from those of *C. coccinea* in being always crenate, and from those of *C. vestita* in the small size of the crenations, and in the rusty, not white, tomentum.

2. COLQUHOUNIA ELEGANS Wall., emend.

Tomentum of simple hairs on stems and serrate leaves; hairs on the corolla few-celled, glandular at the base; wings of nutlets entire, acute, longer than body of nut; calyx teeth acuminate.

INDO-CHINA; S. CHINA.

VAR. *α. typica*; whole plant densely, softly tomentose; flowers in very dense many-flowered axillary heads; corolla dark-red or salmon-coloured, with or without crimson spots, tube long, throat wide. *C. elegans* Wall., Cat. n. 2084 (1829); Benth., Bot. Reg., xv, sub 1292 (1829); Wall., Pl. As. Rar., iii, 43, t. 268 (1832); Benth., Lab. Gen. & Sp. 645 (1835); DC. Prodr., xii, 457 (1848); Hook. f. Flor. Brit. Ind., iv, 674 (1885); Collett & Hemsley, Journ. Linn. Soc. xxviii, 116 (1890).

Collettia, *Siphocampylus*, Watt n. 7443! BURMA; Taong Jung Mts., Wallich; Shan Hills at Toungye, Collett! at Mone, Manders! Fulton! at Lwekaw, Manders! Ruby Mines district, frequent, King's collectors! A shrub, 8 to 10 feet high, and apparently never scandent; the flowers are sometimes red (Collett, King's Collectors) sometimes salmon-coloured with crimson spots (Wallich) sometimes uniformly salmon-coloured (Collett, Fulton; Manders).

VAR. β *pauciflora* Prain, almost glabrous throughout, flowers in loose few-flowered axillary heads; corolla red, tube very short, throat wide (*C. coccinea* Hemsl., Journ. Linn. Soc., xxvi, 299 (1890) not of Wall

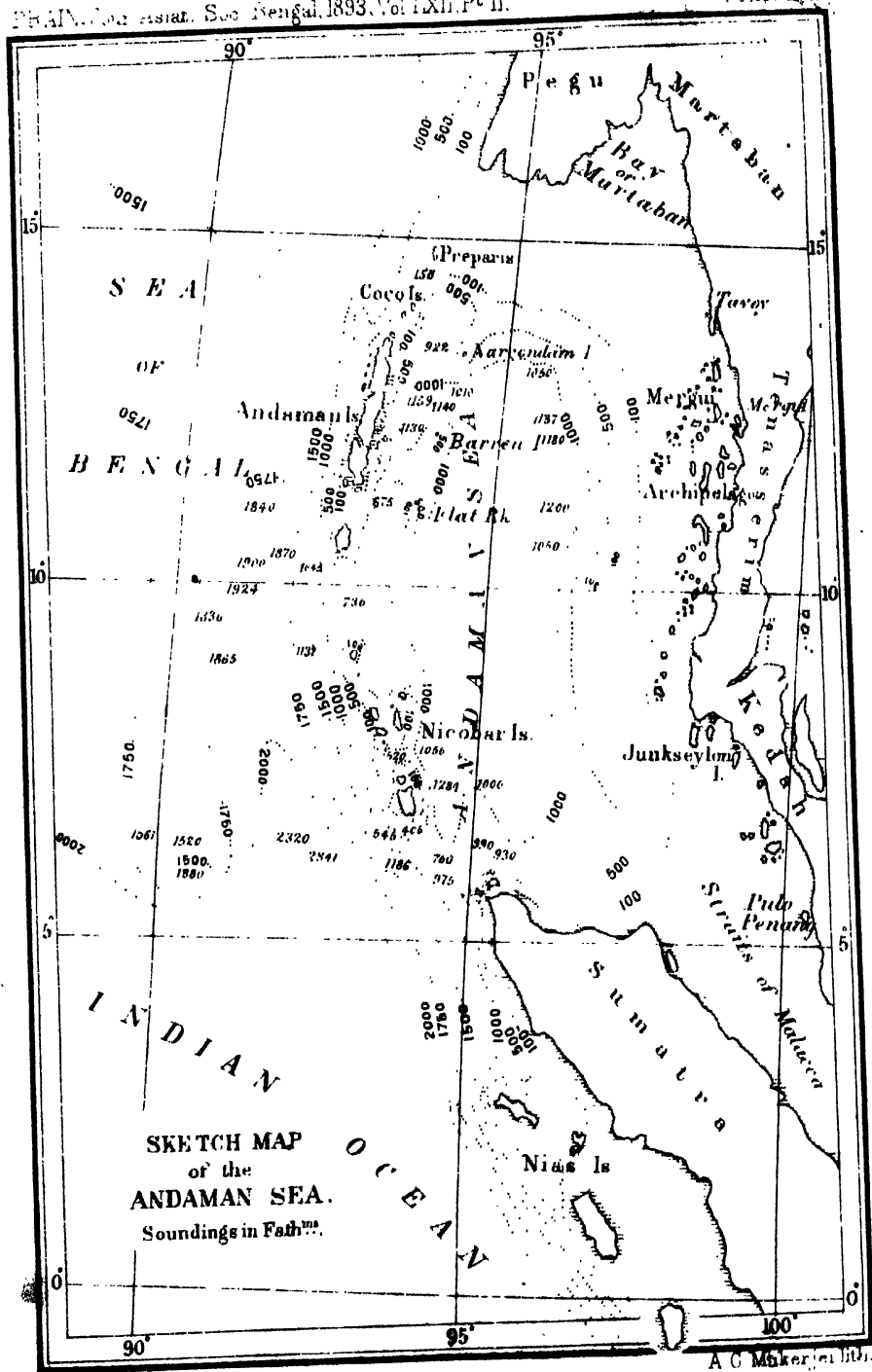
S. CHINA; Ichang, A. Henry n. 3334! BURMA; Kya Valley, Gatacr!

A very distinct, always scandent form, with a much more slender habit than the preceding; the nutlets are however not distinguishable, and the tomentum is of precisely the same character, though so much slighter in degree. If this is treated as a distinct species, which will be necessary if specific rank continues to be claimed for *C. tenuiflora*, it might be known as *C. pauciflora*.

VAR. γ . *tenuiflora* Prain; sparsely hairy throughout, flowers in loose many-flowered long axillary racemes; corolla red, tube very long, throat narrowed (*C. tenuiflora* Hook f., Flor. Brit. Ind., iv, 674 (1885). *C. elegans* Kurz, For Flor. Brit. Burma, ii, 278 (1877) not of Wallich. *C. martabanica* Kurz Mes. in Herb. Calcutta.

S. CHINA; Yunnan, Anderson! BURMA; Poneshee Anderson! Pegu, Kurz! Karenni, Mason! TENASSERIM; Moulmein, Parish!

Also a very distinct form, in habit exactly like the last, but with much longer flowers than even in the type, and with an absolutely, as well as relatively, narrower corolla-throat. Distinct, however, though the form is it is not convenient to give it specific rank, as this would necessitate the recognition of *C. parviflora*, *C. mollis*, and *C. pauciflora* as distinct species also.



PROCEEDING
OF THE
ASIATIC SOCIETY OF BENGAL.

FOR APRIL, 1893.

On the Flora of Narcondam and Barron Island.—By D. PRAIN

Plates III and IV.

[Read May 3rd]

§ INTRODUCTORY SKETCH.

The Indian Ocean is broken on the north by the Indian Peninsula into two roughly triangular seas. The eastern, rather the smaller, forms an area known vaguely as the Bay, Gulf, or Sea of Bengal—the first of these names being that most usually employed—bounded on the west by Ceylon and India, on the east by the Malay Isthmus (Tenasserim) and Indo-China, and on the north by the Gangetic Delta. The ocean-surface thus defined is, however, further differentiated into three distinct hydrographical areas.

These areas are (a) the BAY OF BENGAL, a bight limited to the west by the Kistna Delta, to the east by Cape Negrais and situated to the north of an arbitrary line—the parallel of Lat. 16° N.—beyond which it passes into (b) the SEA OF BENGAL, stretching from Coromandel and Ceylon, on the west, to the Andamans and Nicobars on the east. The Sea of Bengal opens southwards into the Indian Ocean proper, from which it is hydrographically rather definitely limited by the somewhat rapid upward shelving of its floor from the bottom of that ocean to a uniform depth of 2200 fathoms along a line roughly coincident with the parallel of Lat. 6° N. Thereafter its floor is a plain and practically

a level one, for it slopes so gradually northwards that, as it passes into the Bay proper, its depth is still 1400 fathoms. No such clear delimitation exists between Sea and Bay; the plain that forms their common floor still slopes gradually upwards towards the north till, in the neighbourhood of Lat. 20° N., the edge of the shelf of the Gangetic Delta is reached.

The southern edge of the floor of the Sea of Bengal may, in spite of its depth of over 2000 fathoms, be taken as, in a sense, the margin also of the continent of Asia, for there is more than the rapid increase of slope towards the bottom of the Indian Ocean to characterise it. To the west it coincides with that remarkably abrupt terrestrial elevation which results in the island of Ceylon, off the south-west coast of which island, less than 40 miles from the Basses, the ocean depth of 2300 fathoms is reached. To the east a precisely similar terrestrial elevation, though of smaller size and much less height, is met with. Just as Ceylon lies, a pear-shaped eminence, to the east of Lon. 80° E., so to the east of Lon. 90° E. lies the pear-shaped eminence known as Carpenter's Ridge,* a terrestrial mass that rises from a depth of 2300 fathoms in Lat. 5° N., till in Lat. 6° N. and Lon. $90^{\circ} 30'$ E., it 'reaches a point which carries only 1380 fathoms. The 'thick end' of the pear in both cases faces the south, and just as the 'stalk,' in the case of Ceylon, tails north-westward into the Indian Peninsula, the 'stalk,' in the case of Carpenter's Ridge, tails north-eastward into Middle Andaman. There are these differences between the two; the connecting ridge between Ceylon and India carries nowhere more than 8 fathoms, that between Carpenter's Ridge and the Andamans carries 1600 fathoms, while the highest point of Carpenter's Ridge is as much beneath as the highest point in Ceylon is above sea-level.

The third area (c) is the land-locked sea†, bounded on the west by the Andamans and Nicobars, on the north by the Irrawady Delta, on the east by Tenasserim and Kedah, and prolonged south-eastward into the Straits of Malacca, between Sumatra and the Malay Peninsula. This sea is not, as a rule, distinguished by any general name, though

* Alcock: *Annals and Magazine of Natural History*, ser. vi., iv., 377.

† Carpenter: Records of the Geological Survey of India, xx, 48, had proved, as conclusively as it is possible in the absence of actual soundings to prove, that this body of water must be separated from the Sea of Bengal by a ridge nowhere deeper than 760 fathoms, the shallowest sounding known between Acheen and the Nicobars, since the temperature at 1200 fathoms east of the ridge is that appropriate to 740 fathoms to the west of it. Since then the indication of 736 fathoms as the depth on the line from the Nicobars to the Andamans is a striking confirmation of the justice of Carpenter's reasoning.

that portion of it close to the Irrawaddy Delta is spoken of as the Gulf or Bay of Martaban; it has, however, sometimes been spoken of as the Gulf of Pegu, and more recently has received the much more appropriate name of the ANDAMAN SEA.*

* Alcock: *Annals and Magazine of Natural History*, ser. vi., iv., 378. The degree of confusion in nomenclature that prevails is sufficiently exemplified in the various Atlases of recent date. Keith-Johnstone's "Royal Atlas"—an excellent example, of an English Atlas—shows, on the same sheet (India, southern sheet) in the general map, the Bay of Bengal and the Sea of Bengal limited as they are in the text, though the Bay is called the "Gulf" of Bengal; in the small map of the South-Eastern provinces placed on the same sheet this "Gulf" is called, as is more usual, the Bay. No name is given to the Andaman Sea, though the Gulf of Martaban is distinguished. In Stieler's *Hand-Atlas*—an excellent example of a German Atlas—we find (Sheet 67, by Berghaus) the phrase "Moerbusen von Pegu" used as the precise equivalent of Alcock's later-published but preferable name of "Andaman Sea;" the Gulf of Martaban of the English maps is designated, much more correctly than in English maps, "Bai von Martaban." So much confusion of names and their incidence, renders it necessary to insist on some definite system of nomenclature, with a rigid definition of the areas to which the names apply.

It would seem therefore that German geographers are prepared to admit the distinctness of the Andaman Sea as a geographical area, while to modern English geographers the necessity for considering the question has apparently not occurred. If, however, at present they refuse to recognise this as a truly land-locked area deserving of a specific designation, the following passage from a letter dated Calcutta, the 4th March 1795, from Major A. Kyd to Sir John Shore, then Governor-General, will show that even a hundred years ago those who knew the area best realised its true nature. Kyd says.—"The Andaman Islands, 'comprehending what 'are called the Great and Little Andamans, extending from N. Lat. 18°31' 'southward, and lying nearly in a N. and S. direction between 92° and 93° E. of 'Greenwich, are part of a continued range of islands extending from Capo Negrais 'to Acheen Head, including the Preparis, Cocons, Car Nicobar, and the Great and 'Little Nicobars, the whole being a chain of islands between which there is reason 'to believe that there is a continuation of soundings, entirely dividing the eastern 'part of the Bay of Bengal." Kyd was Superintendent of the second, or Port Cornwallis settlement in the Andamans, instituted in 1792, when the settlement, under Blair at Old Harbour, now Port Blair, begun in 1780, was abandoned.

As an example of the usage which terms the whole sea-area between India and Indo-China the "Bay of Bengal," may be mentioned a paper by Hume (*Stray Feathers*, vol. ii.) wherein these two islands, along with Preparis, the Cocons, and of course the Andamans and the Nicobars, are termed the Islands in the Bay of Bengal, as opposed to Ceylon, on the one hand, and the Mergui Archipelago, on the other. This is also the usage of the Admiralty Maps of the region, and though it is certainly indefensible on hydrographical grounds, since the area to the east of the Andaman-Nicobar chain fulfils in every particular—far more so than the Sea of Bengal itself—the conditions laid down in the definition of a "Sea," it is preferable to the slipshod system that distinguishes the Bay of Bengal from the Sea of Bengal, without distinguishing between the Sea of Bengal and the Andaman Sea.

It is in this last-named area that the islands of Narcondam and Barren Island, which form the subject of the present paper, are situated. Those islands the writer was, through the kindness of Col. Cadell, *v. c.*, late Chief Commissioner of the Andamans, enabled to visit in March and April 1891, in order to investigate their Flora. Narcondam was examined for ten days in the end of March; after an interval occupied in visiting Little Andaman and the Nicobars,* Barren Island was examined from April 5th to April 8th.

The volcanic island of Narcondam is situated in the Andaman Sea in Lat. $13^{\circ} 26' N.$ and Lon. $95^{\circ} 15' E.$, 80 miles to the east of Port Cornwallis in North Andaman, 74 miles north-north-east of Barren Island, 150 miles to the south of the nearest point on the coast of Pegu, and 250 miles due west of Mergui. The island rises abruptly out of deep water, more especially on its eastern, western and southern sides, to a height of 2330 feet above sea level, and of 8000 feet from the floor of the Andaman sea between it and North Andaman to the west, and between it and Tavoy on the east.†

The soundings on which the conclusion is based are given in the following table:—

TABLE I.‡—*Soundings in the vicinity of Narcondam.*

GENERAL DIRECTION OF LINE OF SOUNDINGS.	DISTANCE IN MILES FROM CENTRAL PEAK.	DEPTH OF SOUNDINGS IN FATHOMS.
E. S. E.	1½	90
E. S. E.	2	75
E. S. E.	2½	138
E. S. E.	3½	284
E. S. E.	3½	393
E. S. E.	4½	486
E. S. E.	100	1050
..... S. S. E.	..... 1½	..... 242
..... S. S. W.	..... 1½	..... 182
S. S. W.	2½	465
S. S. W.	3½	652
S. S. W.	24½	1010

* Proceedings of the Asiatic Society of Bengal for 1891 (December), p. 156.

† Stieler: Hand Atlas, sheet 67 shows depths, which are quite wrong, of 2097 and 2200 fathoms to the E. and S. E. of Narcondam; how these errors have arisen the writer cannot trace. Sheet 58 of the same Atlas gives the true depth.

‡ This Table, with the corresponding one for Barren Island, is mainly derived from Mallet and Carpenter, Records of the Geological Survey of India, *xx*, 46, *et seq.*, with additional soundings from a copy of the Sounding-Book of H. M. I. M. Survey Steamer "Investigator," kindly lent by Dr. Alcock.

TABLE I.—*Soundings in the vicinity of Narcondam.—(Continued.)*

GENERAL DIRECTION OF LINE OF SOUNDINGS.	DISTANCE IN MILES FROM CENTRAL PEAK.	DEPTH OF SOUNDINGS IN FATHOMS.
S. W.	50	1140
W. N. W.	1½	162
W. N. W.	2½	407
W. N. W.	3	500
W. N. W.	3½	585
W. by S.	40	922
N. N. E.	2	74
N. N. E.	2½	104
N. N. E.	3½	150
N. N. E.	4½	411
N. N. E.	0½	362
N. N. E.	16	290
N. N. E.	52	70
N. N. E.	70	50

The island is a fairly-regular oval with the longer diameter in a line running north-north-east to south-south-west; this diameter is two and a half miles long, the other one and a half. The regularity of outline is somewhat broken at the north-east corner by an oblong peninsula about three furlongs long and half a mile across; this spit, which is occupied by a steep-sided twin-peaked hill, quite dwarfed by the central mass, is in no sense detached from the rest of the island but passes through two or three intervening heights into the main peak. This peak, situated slightly to the south and west of the centre of the island, is crowned by three small points of which the most northern is the highest. The two others, situated a quarter of a mile to the south and to the south-east, respectively, are at the seaward ends of two ridges that diverge from the highest peak, and are separated by the beginning of a deep gorge. The northern point, as already mentioned, reaches 2330 feet; the point to the south is 2150 ft., that to the south-east 2200 feet high. The gorge that separates the two latter, after passing southward between them for about a quarter of a mile, turns south-west round the shoulder of the lower one, and thus partially separates the south end of the island, as a narrow ridge 1200 to 1500 feet high, from the rest of the hill. It is, however, only the western end of this ridge that is free, the eastern end is connected, by means of a narrow but lofty ridge, with the south-eastern part of the central peak. Numerous other gorges, none of them however so striking as that just described, furrow the hill on every side.

The chief interest of this configuration resides in the misapprehensions as to the structure of the island to which it has given rise. McClelland mistook either the ravines or the ridges between them for streams of lava*; Kurz has described and figured the island as a central volcanic cone, surrounded by an outer ring, not much over half the elevation of the central mass, and very largely broken down.† Seen from Kurz's point of view (N. W., $\frac{1}{2}$ N., at a distance of 20 miles) an oblique view of the mouth of the yawning south-western gorge is obtained, while the main mass hides the connection of its southern wall with the central peak. At the same time the peaks already mentioned as connecting the main hill with the somewhat outlying north-eastern spit, serve to conceal their own connections and complete the illusion. At this distance too the three hummocks at the top of the peak look very much like as many points on the edge of a crater. In a nearer view from the same direction the appearance of a central cone is still well-preserved, though the regularity of what seems at a distance the remains of an outer ring quite disappears.‡ Even close in-shore it is impossible to say whether the three points on the peak are, or are not, indicative of the remains of a crater, the forest that clothes them disguising their true relationship. The appearance from another point of view (W. $\frac{1}{2}$ S., at a distance of 40 miles) agrees well with the description by Horsburgh of "a cono or pyramid with its summit broken off."§

* McClelland: *Jour. As. Soc., Beng.*, vii, 77. It would depend a good deal on the distance from which the island was seen, whether the ravines or the ridges between them be what were taken for 'lava-currents.' Seen from a distance of 6 miles or more, through a glass, the darker shadows caused by the gorges might well enough, as Ball (*Records, Geol. Survey of India*, vi, 89), and Mallet (*Memoirs, Geol. Survey of India*, xx, 281) suppose, be what led McClelland astray; as however the drawing on which McClelland based his opinion was taken from about a mile and a half, or two miles from the eastern shore—the drawing was made by Griffith—there is no doubt that what he took for streams of lava were the ridges between the ravines: on this side of the island these are, towards the top, bare and rugged, and are not unlike streams of lava. After all, however, McClelland had nothing to support his idea that the island was volcanic but its conical shape and its isolation.

† Kurz: *Report on the Vegetation of the Andaman Islands*, p. 4. Kurz appears to have had nothing more to go upon in supposing the island to be volcanic than had McClelland; the accident of configuration led him to go further than McClelland, and assume, not only that the island is volcanic, but that it is an island of the same type as Barren Island, in which there is an inner and an outer cone. And with the accounts and the appearance of Barren Island in his recollection—Kurz disposes cursorily of Barren Island in the sentence immediately preceding the one referred to—the idea is by no means unnatural.

‡ Ball: *Records of the Geol. Survey of India*, vi, 89.

§ Horsburgh: *Indian Directory* (ed. v), ii, 56.

Throughout the southern half of the island the coast line has been eaten by the sea into bare cliffs that vary in height from 50 to 800 feet. From the appearance these present to any one circumnavigating the island it would seem that these, even at the mouths of the gorges, and even if landing in spite of the heavy swell that usually surges round the island were feasible, must be altogether inaccessible. Much of the northern half of the island is similarly sea-worn, but the northern cliffs are not in many cases very high. The north-west corner of the island is a sharply triangular ness, with a high cliff for its northern, and a sloping hill-side, ending in lower cliffs, for its western seaface. This western slope overlooks a bight half a mile wide, but of only a furlong's recession. This bight, open to the north-west, is divided into two almost equal bays by a small detached islet, between which and the main island stretches a rocky reef. To the south of this islet and reef is a somewhat indifferent anchorage, and landing from a boat is possible on its small shingle beach, behind which a few coco-nut trees grow. This beach is close to the reef and at the mouth of a rather narrow gorge which leads fairly directly to the main peak.

The cliffs that form the east side of this ness overlook a much finer bight bounded on the east by the oblong spit already described, more than half a mile across, and with a recession almost equalling its width. The head of this bight further recedes into a small inviting-looking bay which, however, begins to shoal* about a hundred yards from the shore, and the strong swell that surges round either cape is broken as it crosses the bay into a heavy surf which renders landing neither pleasant nor safe.† This bay, which may be termed Coco Bay, is bounded by a level stretch of turtle-frequented sand, behind which is the only good example of *Pandanus* sea-fence on the island; behind the sea-fence is a fringe of coco-nut trees; beyond the coco-nut zone, and at the mouth of one of the largest gorges in the island, is a small stretch of level land, due, no doubt, like the shallowness of the bay, to the deposition of detritus from the main hill. In this flat patch, immediately behind the coco-nuts and to the west side of the stream-bed, is a grove of plantains.

* Ball: Records of the Geol. Survey of India, vi, 89.

† Hume: Stray Feathers, ii, 109. The landing mentioned by Ball and described by Hume is the only one on record at this bay. Probably, however, it is not the only one that has been effected. Though the *Coco-nuts* that line its margin may have been introduced by the sea, this cannot be said of a grove of *Plantains* that occurs. Landing did not seem possible at the time of the writer's visit, nor was it necessary; the bay, which was visited several times, was reached by cutting a path through the jungle from Anchorage Bay. It is of course possible, though hardly likely, that the individuals who introduced the *Plantains* also cut such a path.

To the south-east of the oblong spit, and therefore on the east side of the island, is a third, much wider bight, three-quarters of a mile from cape to cape, but only receding a furlong and a half. The northern half of this bay, bounded by the hilly spit, is overlooked by steep hill-sides ending in cliffs that, though not lofty, are particularly abrupt. The southern half, limited by the main island-mass, has a beach of rounded boulders; behind this is a straggling sea-fence in which stands a solitary coco-nut tree; a narrow belt of true beach-forest lies beyond. It was with little expectation of being able to land that we put into this bay; we were therefore agreeably surprised to find that—at least at the time of our visit, the end of March—not only could a landing be made without difficulty, but that the bay afforded a more comfortable anchorage than Anchorage Bay itself. The boulder beach slopes rather gradually outwards, and is of a considerable width; probably therefore the surf here is very strong during the north-east monsoon. That the sea-fence is here irregular and thin is no doubt due partly to the surf, and partly to the fact that it has an insecure root-hold among the rounded stones that are piled behind the beach into an embankment which protects the forest beyond. This beach-forest occupies a strip of level land that stretches backwards from 50 to 100 yards to the base of the main hill. Three gorges debouch on this level area and have filled up the interstices of the old beach with the soil on which the trees grow. At the mouth of one of these ravines there is a gap in the beach-forest occupied by a small depression that in March is covered with only a coating of fine sun-cracked mud, but in the rains evidently forms a small lagoon; this appears to be the only spot in the island where water ever lodges.

Though entirely volcanic in structure there is no indication at the summit or elsewhere that the island has recently been active. There is no crater at the top*, and his examination led the writer to think, not that all traces of craterine shape have been obliterated by long erosion, but that there never has been any crater on the peak. The local features, coupled with the nature of the rocks that constitute the island,†

* Mallet: *Memoirs of the Geol. Survey of India*, xxi, 281.

† Ball *Records of the Geol. Survey of India*, vi, 90, only mentions a bed of volcanic agglomerate, (of which several crop out round the coast), at Coco Bay, where-in are embedded trachytic boulders. Mallet—*Memoirs of the Geol. Survey of India* xxi, 281-283—describes the Narcondam lavas as "compact, or very slightly vesicular" "lavas in which crystals of white translucent felspar, and black or dark-brown "hornblende, are disseminated through a ground-mass which is (generally light) "grey in unaltered specimens, but pale red in those that have undergone weathering "and in which the iron has been peroxidised." Farther on, Mallet remarks:—"The "lavas of Narcondam are essentially hornblende andesites, and are of a decidedly "more acid character than those of Barren Island." This character, of acidity,

appear to indicate that originally Narcondam may have been a volcano, produced, like the volcano that appeared on the Island of Camiguin in July 1871,* by the extrusion of viscid lava without the accompaniment of crater-forming materials. In any case, the depth of the ravines that plough the flanks of the hill on every side indicates very clearly how remote has been the period of the island's activity.†

The top of the island is frequently bathed in cloud;‡ during the ten days spent in the island in 1891, this cloud-cup seemed to envelope, for the greater part of the day, the last 100 feet of the peak. The appearance, however, was slightly deceptive; for it was noticed that the cloud was only condensed on the western aspect of the hill, and that towards evening the peak always became clear. The nature of the vegetation on the peak,—the trees bearded with moss, and their bark covered with *Trichomanes*—indicates clearly that this is a usual state of affairs.

Save on the sea-cliffs, which are bare, and on the eastern side of the peak near the top, where the jungle is thin and scrubby, the whole island is clothed with dense forest: this consists mainly of lofty trees, with but few climbers, in the beds of the various watercourses. On the intervening ridges the vegetation consists of a tangled mass of shrubby growth overloaded with creepers. Landing at Anchorage Bay one finds on the shingle some plants of *Ipomœa biloba*; immediately behind the shingle, and under the shade of about a dozen coco-nut trees, is an attempt at a sea-fence, composed of *Scaevola Koenigii*, *Hibiscus tiliaceus*, *Morinda bracteata*, *Guetlardia speciosa*, *Pandanus odoratissimus*; some *Ipomœa grandiflora*, *Convolvulus parviflorus*, and *Wedelia scandens* climb over these. Behind these bushes some trees of *Barringtonia speciosa*, *Terminalia Catappa*, *Erythrina indica*, *Sterculia rubiginosa*, *Thespesia populnea*, *Dracœna angustifolia*, *Arlisia humilis*, and *Izora brunneescens* represent the beach-forest. There is, however, but scanty room for species of either class, and a few plants of *Eranthemum succifolium* underneath the trees complete the representation of this sort of vegetation in this situation. To the south of this point are some low cliffs, covered at the top with a tangled mass of *Hoya orbiculata*, while at their base plants of *Pluchea indica*, *Blumea glomerata*, *Vernonia divergens*, *Desmodium polycarpon*, *Cyperus pennatus*, and *Thysanotena acarifera* occur; the last-named,—it is, by the way, the only grass that is found on the island—is the most plentiful and seems to be, besides *Fimbristylis ferruginea* and *Boerhaavia*

strongly supports the conclusion (to which Mallet also inclines) that there never was a crater in Narcondam, and that the island is of the endogenous volcanic type.

* Moseley: "Notes by a Naturalist on the 'Challenger,'" p. 409.

† Mallet: *Memoirs of the Geol. Survey of India*, xxi, 284.

‡ Ball: *Records of the Geol. Survey of India*, vi 89.

repens, about the only species that occurs on the rocky sea-cliffs. On the small islet in Anchorage Bay and on the rocks to the north of the reef that connects it with the main island, is a scrubby jungle of *Hibiscus tiliaceus*, *Acacia concinna*, *Dalbergia monosperma*, *Premna integrifolia*, *Glochidion calocarpum*, *Breynia rhamnoides*, *Blackia andamanica*, and *Gelonium bifarium*,—the last-named especially plentiful.

In the denser interior jungle on the hill between Anchorage Bay and the gorge that debouches at Coco Bay, one is struck by the familiar Andaman feature of groves of gregarious Euphorbiaceous treelets forming an under-growth in a forest of lofty trees. Of this forest, *Ficus nitida* and *Ficus Rumphii* are perhaps the chief constituents; the two commonest gregarious species are *Actephila excelsa*—undoubtedly the species on the island represented by the greatest number of individuals, and *Mallotus andamanicus*—also, in many places, very plentiful. The herbaceous species found underneath these treelets are mainly two ferns: *Acrostichum appendiculatum*, which is not very plentiful, and *Asplenium urophyllum*, which is. Among other species, found chiefly on a comparatively level tract on the top of the ridge, where the gregarious feature noted during the ascent from the east coast gives place to a mixed forest, the undergrowth includes *Alsodia bengalensis*, *Cansjera Rheedii*, *Glycosmis pentaphylla*, *Capparis apiaria*, *Pisonia aculeata*, *Vitis lanceolaria*, *Lican sambucina*, *Momcydon edule*, *Abrus precatorius*, *Mucuna gigantea*, *Bridelia tomentosa*, *Ficus hispida*; *Acrostichum appendiculatum* is here common, while *Asplenium urophyllum* is rare. The trees are also more mixed, and include, besides the two species of *Ficus* already mentioned, a *Bombax*, *Erioglossum edule*, *Diospyros Kurzii*, *Oroxylum indicum*, *Antocarpus Lacoocha*, *Antiaris toxicaria*, *Ficus comosa*, and *Amoora decandra*. Besides the two ferns mentioned, a not infrequent herbaceous species is a fine *Amorphophallus*. Along the ravine that passes northward to debouch at Coco Bay occur the same species; near its mouth, where the ground is flat, the jungle becomes 'scrub'—*Morinda*, *Premna*, and such like shrubs, loaded with tangled masses of *Ipomoea vitifolia*. This type of jungle takes the place of the absent beach-forest; the sea-fence is however well-developed, and is of the usual Malayan type,—*Pandanus*, *Guetarda*, *Morinda*, *Hibiscus tiliaceus*, *Casalpinia Bonducella*, *Colubrina asiatica*, *Allophylus Cobbe*, *Vigna lutea*, *Canavalia turgida*, and such like plants. Round this bay the coco-nut zone is well developed; behind it is the plantain grove already referred to.

East Bay, visited subsequently, may be here most conveniently described. On the beach occur both *Ipomoea denticulata* and *Ipomoea biloba*; along with these occur *Vigna lutea* and *Phaseolus adenanthus*; the sea-fence is represented by a few examples of *Pandanus odoratissimus*,

Hibiscus tiliaceus, *Capparis tenera*, *Ocubrina asiatica* and *Clorodendron inerme*. The true beach-forest, here well developed, contains much *Pisonia excelsa*, with a number of trees of the far less common *Pisonia alba*; the other trees of the zone are *Terminalia Catappa*, *Calophyllum inophyllum*, *Thespesia populnea*, *Gyrocarpus Jacquinii*, *Isora brunneusens*, *Ficus brevicuspis*, *Ficus callosa*, *Odina Wodier*, and *Garuga pinnata*; the two last-named, though commonest in, are not confined to this zone. The single coco-nut tree mentioned as occurring here has probably grown from a nut drifted round from the other bay; at Coco Bay, however, it is more probable, considering their association with plantains that the trees have been introduced intentionally.* The edges and bed of the dry lagoon already described were covered with *Ipomoea Turpethum*.

Along the edge of the cliff overlooking the west side of Coco Bay some species, not seen elsewhere, were met with: *Entada scandens*, *Acacia concinna*, a *Grewia* (in leaf only, perhaps *G. larvigata*), a *Tylophora* (in fruit only, perhaps *T. globifera*), *Pederia fatida*, and *Dioscorea sativa*. The steep hill-side overlooking the northern part of Anchorage Bay is covered with a scrub-jungle of *Pisonia*, *Bryonia*, and such like shrubs, with a good deal of *Capparis sepiaria*. All over this hill were seen withered leaves of the *Amorphophallus*.† The hill-side overlooking the southern portion of Anchorage Bay is covered with the same dense

* These coco-nuts are too old and too numerous to have been introduced of recent years; it seems strange, therefore, that they have never before been mentioned. The recorded visits to Narcondam are:—(1). That of Messrs. Hume and Ball in 1873, when a landing was effected, and no more; (2). that of Messrs. Mallet and Hobday in 1884, when four days were spent in investigating its geology and topography, and an ascent, probably the first, was made of the peak; (3). the present visit, when the peak was again ascended. The account of their landing place shows that it was at Coco Bay that Ball and Hume landed; at no other bay is there shall water. Ball mentions some of the plants noticed by him at this place, but neither he nor Hume have recorded the existence of coco-nuts and plantains. Mallet is equally silent, his paper being rigidly confined to the topography and geology of the island. Though these are the only recorded visits, there have been others paid to the island. Hume (*Stray Feathers* ii, 110) mentions a visit by Col Tylor. Again, Kurz (*Report on the Vegetation of the Andamans*, p. 13.) mentions a deputation that visited Barren Island in 1866, in search of pasture-grasses; from specimens in the Calcutta Herbarium, however, we learn that this deputation a few days later visited Narcondam and the Coco Group. In connection with the systematic list, occasion will be taken to refer to the acts of the deputation in question. It is sufficient to say here that to its members is probably due the merit of having introduced, at least the plantains, and perhaps also the coco-nuts. This would make it certain that both species were present at the time of Hume's visit.

† Corms and seeds of this plant were brought to the Royal Botanic Gardens, Calcutta, where it has sent up leaves and has flowered.

forest, mainly *Ficus*, but has for its undergrowth quantities of *Ocrotia mitis*, with dense patches of *Polia Aclisia* underneath.

The ridges between the gorges are tolerably uniform in the nature of their vegetation; *Premna integrifolia* extends a good way up, *Morinda bracteata* is found throughout the island and is as common at the top as it is on the coast; *Trema amboinensis*, *Capparis sepiaria*, and *Acacia concinna*, are common species; not infrequent is *Callicarpa arborea*, though far less common here than on Barren Island. In the gorges patches of *Macaranga Tanarius*, *Trema amboinensis*, *Pipturus velutinus*, *Bahmeria malabarica*, as gregarious species, are common, and form, especially in the lower part of the hill, the prevalent undergrowth. The trees are those already enumerated, but as additional species, may be mentioned the following, all obtained in the gorge leading from Anchorage Bay to the summit of the peak:—*Anoora Rohituka*, *Apodytes andamanica*, *Semecarpus heterophylla*, *Myristica glauca*, *Ficus glaberrima*—the last mentioned a small tree, at about 2000 feet elevation. The climbers not previously noted were *Anamirta Cocculus*, frequent; *Antitaxis calocarpa*, very common; *Aristolochia Tagala*; *Gouania leptostachya*; *Trichosanthes palmata*; *Anodendron paniculatum*; *Dischidia nummularia*; *Pothos scandens*, and *Strychnos acuminata*, at about 1200 feet elevation. The herbaceous species not before observed were *Blumea myriocephala*, only once at about 1600 feet elevation; *Asplenium nidus*, seen on trees throughout the ascent; *Nephrodium terminans*, not common below 1000 feet, very frequent above that height; *Davallia speluncea*, here and there throughout the ascent; *Polypodium irioides*, at about 1800 feet elevation; *Polypodium adnascens*, on trees throughout the island, not common; *Bryum coronatum*.

As the summit is neared, and one passes within the area usually moistened by the cloud-cap, the trees are covered with moss (*Neckera rugulosa*), and bear on their bark quantities of *Trichomanes pyxidiferum*. In other respects the jungle on the top does not differ from that lower down, except that, owing to the ridges being of necessity greater in proportion to the gorges than lower down the hill, there is relatively more of scrub jungle than one finds below.

Few Fungi were obtained during the visit: doubtless the season of the year was unfavourable. No Algae were found either on the rocks or washed up on the beaches. The ocean-drifts consisted almost entirely of fruits or seeds of species that occur on the island; the only exception noted was a fruit of *Heritiera littoralis* found at East Bay.

Barren Island is situated in the Andaman Sea, in Lat. 12° 15' N. and Lon. 93° 50' E., 60 miles to the east of Middle Andaman, 74 miles south-south-west of Narcondam, 80 miles north-north-east of Flat Rock

(a submarine peak that reaches the surface, but no more, in Lat. $11^{\circ} 12'$ N. and Lon. $93^{\circ} 36' E.$), and 320 miles due west of Morgui. As shown in the subjoined table, the island, like Narcondam, rises abruptly out of deep water, especially on its eastern, western and northern sides, to a height of 8000 feet or more* above the floor of the Andaman Sea.

TABLE II.—*Soundings in the vicinity of Barren Island.*

GENERAL DIRECTION OF LINE OF SOUNDINGS.	DISTANCE IN MILES FROM CENTRAL CONE.	DEPTH OF SOUNDING IN FATHOMS.
E. S. E.	1½ (½ mile from shore).	118
E. S. F.	2½	433
E. S. F.	3½	641
E. S. E.	100	1260
N. N. E.	1½ (½ mile from shore).	217
N. N. E.	2½	545
N. N. E.	3½	782
N.	1½	325
N. •	25½	1,140
W. N. W.	1½ (½ mile from shore).	180
W. N. W.	2½	456
W. N. W.	4½	655
W. N. W.	45	1159
W.	1½	169
W.	30	1130
S. S. W.	1½ (½ mile from shore).	47
S. S. W.	3½	238
S. S. W.	4½	413

Physiographical accounts of this island have been given by Ball† and Mallet‡ in whose papers a précis of previous information is also contained; a brief description is therefore all that is here necessary.

Nearly circular in outline and about two miles in diameter, the island consists of a huge crater, of which the mouth is a mile wide and the rim is from three-quarters of a mile thick at the base—throughout its southern half, where it is from 920 to 1160 feet high—to barely half-a-mile thick—along the north where its height is from 630 to 790 feet. The rim is further breached to below sea-level on the west side by a part of the original hill having been at one time blown away, the resulting gap being about a-quarter of a mile wide. In the middle of

* Mallet and Carpenter: Records of the Geol. Survey of India, xx, 46, (footnote).

† Ball: Records of the Geol. Survey of India, vi, 81.

‡ Mallet: Memoirs of the Geol. Survey of India, 251, et. seq.

the amphitheatre that results, and therefore about a-quarter of a mile to the north of the centre of the island, a newer perfect volcanic cone rises to a height of 1015 feet. At the top there is an ovoid crater, somewhat straighter along its northern than its southern edge, and somewhat higher on these edges than at either extremity. The edges mentioned are nearly 80 feet above the bottom of the cup which is itself sub-divided into two parts. The western, somewhat irregular, is full of loose lava fragments, and has its floor nearly 40 feet higher than the other, which is an almost perfect circle, about 20 yards wide, with a floor of smooth soft sand. At the west end the rim of the crater is about 40 feet lower than along the north and south edges, and is thus very little above the floor of the minor western depression. In the middle of this dip the rim carries a huge lava block, about 20 feet long, 10 ft. wide, and nearly 20 feet high.* This block forms a striking object on the cone as seen from the landing-place. At the eastern end of the crater the rim dips even more, and is about 60 feet below the level of the northern and southern edges, or just over 20 feet above the floor; the edge is here narrower than elsewhere. In and about the crater are several solfataras with crevices whence steam escapes.

The cone itself consists of volcanic ashes, fairly firm on the south, east and north sides, but loose and friable on the western face. The slope is very uniform, being about 30° on every side. The valley between the cones contains, at the base of the inner, two lava streams that have flowed to the sea through the breach in the outer; of these streams the northern overlies the southern. There has also been a third flow to the east, this does not, however, come in contact with either of the others. The sea, it may be remarked, does not enter the breach in the outer cone, the breach, as well as the valley between the cones, being filled to above sea-level by the products of the newer volcano.

The seaward slope of the outer cone is much steeper in the northern than in the southern part of the island, and is furrowed by many nearly meridional ravines, difficult of access where they enter the sea, but more easily traversed further up. The slope of this half of the ancient crater towards the newer volcano is, on the other hand, even and rounded, consisting for the main part of bare, loose black ash, derived from the inner cone. The inner slope of the southern half of the original volcano is, on the other hand, except at its base, steeply precipitous; the seaward slope of this half, besides being much more gradual than that

* The measurements (Mallet: *Memoirs of the Geol. Survey of India*, xxi, 267) are:—Length, 22 feet; breadth, 11 feet, height, 13 to 19 feet. The greatest height is at the west end, where it is also narrowest; its most striking aspect is to the spectator on the beach at the landing-place, to whom it looks like a huge tooth.

of the northern half, shows a second subconcentric ridge separated from the true rim by a gorge that debouches on the east side of the island. Gorge and ridge owe their origin, however,—like the ridge and ravine of the same nature, but of more imposing proportions, that occur at the south end of Narcondam—to subaërial denudation, not to volcanic action.

The excentric position of the newer cone, with the lesser relative height, and the steeper seaward slope of the northern half of the original crater, seems to point to subsidence of that half. Perhaps the explosive eruption which effected the breach to the west may have had some connection, direct or indirect, with this subsidence. The volcano represented by the outer cone was doubtless at one time much higher than it is now.

At the landing-place in the breach there is a hot spring on the beach; the temperature of this spring is steadily falling, and at the time of the writer's visit was 106° F*. The spring doubtless only represents percolation of rain water through the heated newer materials—the inner cone and lava streams—contained within the circuit of the ancient crater.†

The anchorage in the bay at the breach is of the most uncomfortable description; the safest anchorage is opposite a small bay with a sandy beach, a *Pandanus* sea-fence and a line of Coco-nut trees, on the south-west side of the island. Landing by boat is, however, usually quite easy on the beach at the hot spring to the north of the point where the lava stream falls into the sea; the surf that rolls into Anchorage Bay must make it impossible, as a rule, to land there.

At Landing Bay the boulders and stones on the beach, bathed by the water of the hot-spring, are covered by a species of *Calothrix* which occurs in considerable quantities. Another, *Alga*, also a *Calothrix*, was obtained from bare rocks in one of the gorges; no marine *Alga* were seen. On the beach itself, behind a small bed of drift, are some examples of *Ipomœa biloba*; the drift contained, in addition to fruits and seeds of species noticed in the island, fruits of *Barringtonia speciosa* and of *Heritiera littoralis*.‡ Close to the beach and to the lava flow is an example of *Pongamia glabra*; a little further inland to the north of the lava is a considerable grove of *Flueggia microcarpa*, with quantities of *Mitreola oldenlandioides*, in the sandy soil beneath. Beyond this grove is

* Prain : Proceedings As. Soc., Bengal, 1891, p. 84.

† Mallet : Memoirs of the Geol. Survey of India, xxi, 274.

‡ *Barringtonia speciosa* occurs in Narcondam, and it may possibly also occur at some of the bays on the south-west and south of Barren Island, where the surf made landing impracticable. But *Heritiera littoralis*, the fruits of which were collected in Narcondam also, does not seem to occur in either island.

a thicket of *Mussaenda macrophylla*—the accident of its situation has converted the species into a straggling shrub and imparted to it a very distinct facies. On the lava itself nothing grows, though further inland and to the south of the stream it is in several places partially covered by beds of *Aganosma marginata*, which, rooted in the adjacent soil, and having no trees on which to climb, prefers sprawling over the bare black lava to spreading along the ground among the grass. This grass, *Ischemum muticum*, almost completely occupies the plain between the lava flow and the inner wall of the outer cone, which is thus a great meadow in which, however, there are some patches of scrub jungle, the chief constituents being *Dodonaea viscosa*, *Plueggia microcarpa*, *Gelonium bifarium*, *Phyllanthus reticulatus*, *Trema amboinensis*, *Dalbergia tamarindifolia*, and stunted examples of *Callicarpa arborea*.

The inner cone is merely a "cinder-heap," with hardly any vegetation; a few very stunted examples of *Trema amboinensis* on its southern face, about 650 feet up, and small shrivelled tussocks of *Fimbristylis ferruginea* scattered unevenly over all the sides except the western, being the only plants present. The interior of the crater has more vegetation than the whole outside of the cone; near the crevices in the inner wall, and especially on the south side where the soil is moistened by the condensation of escaping steam, occur *Nephrolepis tuberosa* (also obtained elsewhere in the island), *Cheilanthes tenuifolia* (very small and stunted specimens), *Lycopodium cernuum* (all over the stones in the western, more shallow depression of the crater), *Psilotum triquetrum* (also found in Java, on the crater of Gunong Boddas Proanger, by H. O. Forbes), *Pholidota imbricata*, *Vandellia crustacea* and *Oldenlandia corymbosa*; in the sand at the bottom of the deeper eastern craterine depression occur luxuriant patches of *Fimbristylis ferruginea*.

An attempt was made to land at Anchorage Bay; owing, however, to the heavy surf that rolls in this was found to be impossible. The beach in this bay is sandy; behind it could be seen the usual sea-fence of *Pandanus*, a species seen nowhere else on the island. Just within the *Pandanus* fence rise 13 coco-nut trees tall enough to be seen and counted. Judging from the analogous beaches in the Coco Group and Narcondam it may be anticipated that there are many seedlings besides. To verify this surmise an attempt was made later on to cross the outer cone from the amphitheatre and work down to this beach. The attempt did not succeed; the sea was reached at a point too far to the east and the attempt was not considered worth repeating.* Rowing round the island

* Those who have been engaged in similar work will understand how difficult it is under such circumstances to strike the proper ridge or ravine. The results of the journey, which it took a day to accomplish, were not sufficiently remunerative

a landing-place was looked for in bay after bay; to no purpose, however, the heavy south-western swell surged on their benches in breakers so huge that any attempt to land was precluded. On the east, north, and north-west sides however, landings were effected; in the first case the crest of the outer rim was attained at a point where further progress was barred by its precipitous nature. By the gorge entered from the north it was found impossible even to reach the crest; the north-west landing, after some difficult climbing, led to the edge of the outer cone and permitted an easy descent into the amphitheatre.

The inner walls of the outer cone, where too steep for trees and shrubs, are densely and evenly clothed with *Pogonatherum saccharoideum*, along with which are associated patches of *Desmodium polycarpon*, *Onychium auratum*, *Pteris bicutita*, *Nephrolepis tuberosa* (found also within the crater), and *Fimbristylis diphylla*. On one somewhat damp spot, where there had been recently a small landslip, were found, on the otherwise bare soil, some plants of *Pteris longifolia*, *Oplismenus Burmanni*, *Physalis minima* and *Vandellia crustacea* (this last was also obtained inside the crater). On the inner northern wall of the outer cone, which is heaped with ashes, there is hardly more vegetation than on the inner cone itself, the only species that grows being the *Fimbristylis* found on the cone. At the base of the cliff which forms the inner southern wall there is a uniform but not very dense forest the commonest species in which are *Terminalia Catappa* (certainly the most abundant tree on the island), *Eugenia Jambolana* and *Callicarpa arborea* (both very common), *Sincaecarpus heterophylla*, *Claruga pinnata*, *Laena cuneifolia*, *Ardisia humilis*, *Ororylum indicum*, *Macaranga Tanarius*, *Trema amboinensis*. Quite a feature is the extent to which a wild vine, *Vitis repens*, prevails in this area; among other creepers noted were *Cyclosa peltata* (not seen in Narcoudam), *Abrus precatorius*, and two *Dioscoreas* (only one apparently occurring in Narcoudam). Another noteworthy feature of this forest is the presence, though not in great quantity, of a species of *Dendrobium*. The bare rocks in the gorges over which water in the rains must pour in cascades are here and there covered with dried-up masses of fresh-water *Alga*, *Calothrix tasmanica*.

The forest on the outside of the outer cone is much like that just described though the trees are more weather-beaten. The species present inside are all met with outside also, but though *Terminalia Catappa* is still undoubtedly the most plentiful tree, and there are many considering the limited time at the writer's disposal, to justify another attempt. The majority of the gorges on the south side of the island have an eastward tendency, and are thus unlike those in the north side which are more truly radial; this circumstance led to the selection of a point for descent too far along the rim.

examples of *Ficus Rumphii* and *Ficus nitida*, with a considerable number of *Ficus cuspidifera*. The two *Dioscoreas* are very common climbers; *Capparis sepiaria* is exceedingly common as a climber, or rather as an under-shrub, in the forest; *Gloriosa superba* was seen in the sea-face jungle on the east side of the island; *Adiantum lunulatum*, another species not seen in Narcondam, is very common on the outside of the outer cone. On bare rocks near the sea *Boerhaavia repens* is plentiful, and species of the littoral class noted at the points where landings were effected include *Hibiscus tiliaceus*, *Sterculia rubiginosa*, *Colubrina asiatica*, *Ixora brunnescent*, *Pluchea indica*, *Wedelia scandens*, *Scaevola Koenigii*, *Persea integrifolia*, *Glochidion calocarpum*, *Gelonium bifarium* *Terminalia Catappa*, a truly littoral species, spreads here from base to top of the outer cone; the same is true of *Morinda bracteata*, another plentiful sea-coast species. *Cocos* and *Pandanus* have been already mentioned as occurring only at Anchorage Bay.

The question regarding the Coco-nut trees on Barren Island is somewhat simpler than in the case of Narcondam, for they have not been deliberately planted: at the same time it cannot be contended that they afford an unequivocal instance of introduction by the sea. It is not clear that any one has ever landed at Anchorage Bay;* it is certain that for the greater part of the year, to attempt to do so would be very dangerous. At the same time when ships call they usually anchor at this place, and it is not improbable that during some such visit a coco-nut dropping overboard has been washed ashore and germinated in the drift collected by the roots of the sea-fence. Man indirectly, rather than the sea, may therefore be supposed to have been the introducing agent.

Fungi were as scarce on Barren Island as in Narcondam, and the only moss met with was *Bryum coronatum*.

To complete the account of these islands mention must be made of Flat Rock, situated, as has been already mentioned, in Lat. 11° 12' N., and Lon. 93° 86' E., 80 miles south-south-west of Barren Island, 50

* From the Report of the Andamans' Committee already referred to (*Proceedings, As. Soc. Bengal*, 1886, p. 215), it would appear that their experience was quite that of the writer. The passage is interesting and is worth quoting verbatim:—"The only place where there seemed any chance, was on the south-west, where a small sandy beach, with a heavy surf running, was discovered, above which four old cocoa-nut trees were seen. A boat was sent towards the shore and got bottom at 35 fathoms, but as we had not much time to spare, the whole of the ground could not be gone over, ***." The italics are the writer's; the passage will be referred to again in the systematic list of the plants collected. It is strange that though from the year 1866 onwards these coco-nut trees have been used as the guide-mark to the safest anchorage on the coast of this island, neither Hume, Bell nor Mallet, in their accounts of the island, have noted their presence.

miles east-south-east of Rutland Island, and the same distance due east of the opening, Duncan Passage, between Rutland Island and Little Andaman. The rock appears above the surface, and no more; but though so much smaller as a subaërial peak than Barren Island or Narcondam, as a submarine peak it is evidently larger than either, since its summit appears as a long narrow bank that carries from 15 to 80 fathoms of water; this bank does not extend to the east or the west for more than two miles from the Rock, but towards the south extends at least 10 miles, to the north more than 20 miles. Beyond the edge of this bank—the Invisible Bank of the Admiralty maps—the lead sinks at once into deeper water. The Bank itself has been carefully surveyed but of the absolute depths of the soundings just beyond we know little or nothing, so that though this survey is invaluable to navigators, from a hydrographical point of view it leaves much to be desired. Meagre however as its details are it shows that the soundings are deeper towards the east, south, and west than they are towards the north. The following TABLE indicates the soundings shown in the Admiralty maps:—

TABLE III.—*Soundings in the vicinity of Flat Rock.*

GENERAL DIRECTION OF LINE OF SOUNDINGS.	DISTANCE IN MILES FROM ROCK.	DEPTH IN FATHOMS.
N. N. E.	1	14
N. N. E.	10	25
N. N. E.	13	27
N.	6	38
N.	15	80
N. W.	5	16
N. W.	10	59
N. W.	15	168
W.	10	00 (no bottom.)
W.	35	500
S. W.	3½	78
S. S. W.	8	35
S. S. W.	16	200 (no bottom.)
S. E.	2	16
S. E.	7	48
S. E.	12	200 (no bottom.)

Along the east side of the bank none of the soundings made have touched bottom, but they show that the edge drops into deep water within 5 miles of a line running from south-south-west to north-north-east

through the rock; along this line the soundings show a rather sharp ridge with relatively shallower soundings for the whole length of the bank; this line, it is hardly necessary to repeat, is that on which both Narcondam and Barren Island also show their shallowest soundings, while the axes of all three islands indicated by this direction form very nearly a continuous straight line.

The nature of the bottom on this bank is only mentioned in the case of one sounding; this depth, 25 fathoms, gives, as might be expected, coral; it would be interesting to ascertain whether the subaerial portion, Flat Rock itself, is part of a raised coral reef, or a remnant of an originally larger island of volcanic structure. Raised coral reefs occur in the Andamans to the west, and in the Nicobars to the south; it may therefore be anticipated that here it will be found that the subaerial portion of the bank is weathered coral, at the same time it would be more satisfactory to have the question settled by a visit to the rock. Reasoning from analogy, however, there is little doubt that the basis of this coral bank is a submarine volcanic peak, and that it forms but one of a series to which the others also belong.

Our knowledge of the bottom-contour of the Andaman Sea is not so satisfactory as is that of the Sea of Bengal. English geographers give no attention to the point; German geographers have mapped the sea somewhat hastily and from rather meagre data. Thus Berghaus indicates by the contour lines in a map of "Heights and Depths"* that a deep gap, connecting the Sea of Bengal and the Andaman Sea, exists between Achin Head in Sumatra and the Nicobars. It has however long been known that the ridge in this channel carries only 760 fathoms of water. In a larger map† Berghaus shows deep water as overlying not only the ridge between the Nicobars and Sumatra, but also over that between the Andamans and Nicobars and, what is quite unaccountable, between Preparis and the Coco Group; this last channel has long been known to carry no more than 150 fathoms. As regards that between Little Andaman and the Nicobars, Carpenter had, on grounds of temperature, predicted what Hoskyns has since shown to be true, that the ridge under it could carry at the utmost 740 fathoms; its actual depth is 736 fathoms. In this map also two soundings are shown in the meridian of Lon. 96° 10' E., one of them in Lat. 11° 35' N., for

* Stieler's Hand Atlas, Sheet 8, dated 1878.

† Stieler's Hand Atlas, Sheet 67, dated 1881 and revised to 1884; scale 1: 12,500,000. Perhaps the contour line in this map means the 100 fathom line; this would explain the shading in the straits mentioned. If so, it is too far from land, and coincides with the 1000 fathom line rather than the 100 fathom one.

which 2300 fathoms are indicated; the other in Lat. $12^{\circ} 30' N.$ gives 2097 fathoms. These soundings appear to be devoid of authority; at all events they are quite wrong.*

A more reliable map is, however, to be found in the same work.† This map, designed by Petermann and drawn by Habenicht, is, unfortunately for our purpose, on a smaller scale than Berghaus' map. It shows Carpenter's Ridge jutting southward into the 2000 fathom line immediately to the west of the Andamans; shows comparatively shallow water (between the 100 and the 1000 fathom lines), in the two channels between the Andamans and Sumatra, and indicates a depth of 1137 fathoms in Lon. $96^{\circ} 11' E$ and in Lat. $12^{\circ} 24' N.$ —practically the situation of Berghaus' 2097 fathom mark; this sounding indicated by Petermann has the advantage of being a real one. Going further into detail however, one finds that not even Petermann's map gives any idea of the true state of affairs within this sea.‡ For the 1000 fathom line is there shewn as enclosing a long and narrow trough half way between the Andamans and Tenasserim; the three peaks that have just been described are therefore shown as springing from a slope that trends upwards from the bottom of this trough to the Andaman ridge. Instead, however, of indicating a line to the eastward of these peaks the 1000 fathom line passes westward between Narcondam and Barren Island to within 30 miles of the east coast of Middle Andaman, where soundings of 1130 and 1159 fathoms have been obtained; these, it may be remarked, close inshore though they be, have proved (with the exception of a veritable sounding of 1284 fathoms 50 miles east of Little Nicobar, and of a doubtful sounding that gives 1260 fathoms with no bottom in Lon. $95^{\circ} 30' E$, and Lat. $11^{\circ} 45' N.$) the deepest soundings yet obtained in the Andaman Sea, and are more than 100 fathoms deeper than the deepest indicated along the line that connects Barren Island with Narcondam.

There is no doubt that taken collectively these three peaks indicate a northward continuation of the line of volcanic activity known as the "Sunda Range," which stretches up from Sumbawa and Flores through Java and Sumatra at least to Barren Island. Von Buch in his work on

* In a previous paper (*Journ. As Soc Beng.* ix. pt. 2, p. 284) the writer was misled by these soundings, which he supposed to have some foundation, into giving the depth of the Andaman Sea as over 2,000 fathoms.

† Stieler's Hand Atlas, Sheet 58, dated 1884; scale 1 : 30,000,000.

‡ In criticising these maps the writer would wish it understood that it is from no desire to cavil that he points out their defects; it is only because they are worthy of criticism that reference is made to them. Except the Admiralty maps, which are above reproach, no English map with which the writer is acquainted deserves to be mentioned alongside of those in Stieler's work.

volcanoes did not carry the chain beyond Barren Island, but Griffith, who in passing Narcondam recognised its volcanic nature, suggested to McClelland that here might be seen a northward extension of the same chain. McClelland not only adopted the suggestion but sought a still further extension to the north, in the mud-volcanoes of Ramri and Cheduba, off the Arracan coast;* and other writers, such as Daubeny, Scrope, Mrs. Somerville and Mallet† have adopted the same view.

Ramri and Cheduba lie to the west of a tertiary ridge that composes the Yomah of Arracan, which, in the latitude of Ramri, reaches a height of 4,000 feet. This range is continued southward into and beyond the Andaman group. Thus it passes through Diamond Island to the Alguada reef, beyond this, across a channel less than 60 fathoms deep, to Preparis, and again across another of 150 fathoms to the Coco Group, Great Andaman and Little Andaman. It would appear after this to pass to the westward of the Nicobars, though its precise relationship to that group has not yet been made clear; finally it reappears, not in Sumatra, but in a long line of islands—the Nias group—that stretches south-eastward along the western coast of Sumatra.‡ The line of volcanic activity to which Barren Island and Narcondam presumably belong, lies from Narcondam southwards to the east of this tertiary ridge; if, therefore, Ramri and Cheduba belong to the same line, we have to believe that, after continuing for the whole length of Sumatra and the Andamans parallel to this ridge, the volcanic line at its northern end, where its activity is weaker than elsewhere, crosses the tertiary formations where they have become thicker and stronger. This is in itself a proposition, the truth of which is so hard to accept, that when Blanford§ suggests that the true northern continuation of the Sunda volcanic range is to be found in the extinct Burmese volcano of Popah, and the extinct Yunnan one of Han-shuen-shan, we realise that he must be right, and are surprised that, after all, Mallet is inclined, in a modified sense, to favour the earlier view.|| The volcanoes of Ramri are of a different type from those of the Sunda Range; they belong to a series of gas vents, all of the same general character, though none of them so active as the Ramri ones. The Sitakund in Chittagong,

* McClelland, Journ. As. Soc. Beng., vii., 77.

† Mallet does this (Records of the Geol. Survey of India, xi., 303) in a different sense from the earlier writers; they, owing to a want of definiteness in the accounts on which they relied, mistook the "gas" volcanoes of the Arracan Coast for true "steam" volcanoes.

‡ Kurz: Journ. As. Soc. Beng., xlv., pt. 2, 105.

§ Manual of the Geology of India, iii., 725.

|| Mallet: Memoirs of the Geol. Survey of India, xxi., 353.

and the various hot-springs in the valley of Assam, like those in the Nanba Forest,* are examples of this series, which forms a continuous line parallel on its western side to the tertiary ridge referred to, just as the true volcanoes, to the line of which Barren Island, Narcondam and Popah belong, are parallel to it on the east.†

Whether they belong to that particular group of volcanoes known as the Sunda Range, or not, there is no doubt that Narcondam and Barren Island belong to the general volcanic system extending from the Kuriles, through Japan and the Philippines, to Malaya—a system of which the Sunda Range itself forms but a portion. Like the other members of this system, these peaks are situated, not on, but just within, the margin of the continental elevation forming Eastern and South-Eastern Asia, wherever this rises abruptly from great ocean-depths; the main difference between them and most of the peaks of the system is that, whereas the space between the edge of the continental area and the line of volcanic activity is in other cases sub-aerial, that space is here for the most part sub-marine. This space forms, in the case of Sumatra, the main body of the island—the volcanic line being much nearer the eastern margin—and the rocks of which it is composed include all those that go to form the islands of the Nicobar Group; these rocks appear once more, not in the main chain of the Andamans, but in the small islands to the east of South Andaman (north east of Port Blair), known as “The Archipelago.”‡ Neither in, nor opposite, the Nicobars is there any trace of the complementary volcanic ridge; to the east of this “Archipelago,” however, it is indicated by Flat Rock and Barren Island.

Not only is the volcanic line of Sumatra absent from the Nicobars, but no trace has yet been found in that group of the sandstones of the Arracan hills, which are prolonged into the main chain of the Andamans and which re-appear in the Nias. The result, therefore, is that the Arracan-Sumatra chain, in place of constituting a single ridge consists

* Prain : *Proceedings As. Soc. Bengal*, 1887, p. 201.

† The reasons for thinking that the northward prolongation of the Sunda Range has not crossed the Arracan-Andaman ridge are, therefore :—

1. That the volcanoes on the west side of that ridge, which are supposed to continue the Sunda line, are of a different type from the volcanoes of the Sunda Range.

2. That these western volcanoes in Ramri belong to a system of vents of the same type as themselves, characterised by a linear distribution parallel to the western base of the Arracan-Andaman tertiary ridge.

3. That the Sunda Range is continued northward by a series of vents of the same type throughout, the character of linear distribution parallel to the eastern base of the Arracan-Andaman tertiary ridge being maintained unaltered.

‡ Oldham : *Records of the Geol. Survey of India*, xviii., 141.

of two—a western tertiary ridge most marked in the north and tailing off towards the south, and an eastern volcanic ridge most marked in the south and dwindling into insignificance northwards.

The question whether the line in which Narcondam, Barren Island, and Flat Rock are situated consists of a series of isolated peaks, or if these peaks are only the sub-aerial portions of a continuous ridge, remains to be considered. Such evidence as there is appears to indicate that they are situated on a ridge: it is not, however, at all complete. It has already been remarked that the soundings on a line passing north-north-east from Narcondam are relatively shallower than those on any other line. This has been explained by Carpenter as perhaps indicating that the deltaic shelf of the Irrawady extends as far out as Narcondam.* It may be anticipated that this will not be found a sufficient explanation of the phenomenon. It will be observed that the soundings gradually deepen for a space of $9\frac{1}{2}$ miles, till the bottom carries 362 fathoms, and that beyond this point it gradually shallows till the coast of Pegu is reached. If Narcondam were situated on the edge of a delta-shelf, one would expect that the soundings would not show so great a dip within its margin, and would further expect that soundings on lines carried at right angles to the line under discussion would give some indication of a more or less level area. Yet what we do find is that before four miles to the east or three miles to the west of the island have been reached, greater depths have been obtained than the deepest sounding on the north-north-east line. This appears to indicate that Narcondam is not so much on the edge of a shelf, as at the end of a ridge that runs towards and into the Pegu coast-line. That this ridge is overlaid by the deltaic mud to within ten miles of Narcondam, and that the presence of this mud explains the gentle slope from its deepest point upwards to the Pegu coast is no doubt true; but the steady rise during the last ten miles towards Narcondam, coupled with the more abrupt dips to the east and to the west, indicate the existence of a ridge. The matter is capable of direct demonstration: a few lines of deep-sea soundings co-ordinate to the line of soundings taken towards the north-north-east, will disclose the true state of matters. It would also be equally easy, by making a line of borings along the continuation of its line, and a few co-ordinate lines across in the mud of the Irrawady delta, to demonstrate whether the supposed ridge passes subterraneously into Burma.

The same comparative shallowness is indicated by the line of soundings to the south-south-west of Barren Island, and to explain the fact Mallet† suggests the possibility of eruptions of ash distributed

* Carpenter: Records of the Geol. Survey of India, xxi., 48.

† Mallet: Records of the Geol. Survey of India, xxi., 47.

in this particular direction by the action of currents. It would seem easier, however, to explain these soundings by supposing that Barren Island formed the northern termination of a ridge on which Flat Rock, with Invisible Bank, is situated. Here, too, the matter is easily capable of demonstration: soundings on a line bearing from Barren Island to Flat Rock, with one or two transverse lines of soundings will show whether such a ridge exists.

The hypothesis that in Narcondam we see a continuation of the Sunda line of volcanic activity is not invalidated by the depth of the soundings between it and Barren Island. We know that there is a much deeper gap than this between two members of the same chain: in the well-known rift between Bali and Lombok, though the islands mentioned are only 15 miles apart, the narrow strait between is 2,100 fathoms deep.* And as a matter of fact, though the ridge is here deeper, it is by no means absent, for a sounding on the line bearing from Narcondam on Barren Island gives only 1,010 fathoms, while soundings to the west of that line, and between the supposed ridge and the Andamans, give 1,140, 1,159, and 1,130 fathoms. Though our knowledge of the bottom contour of the southern part of the Andaman Sea—the portion to the east of the Nicobars—is very defective, the little that we know bears out the hypothesis of an eastern as well as a western ridge. At a point 50 miles east of Little Nicobar a sounding of 1,284 fathoms is recorded, while 30 miles further east the bottom is only 1,000 fathoms deep. Then north of Pulo Rondo, in Lon. $95^{\circ} 10' E.$, the depth is 990 fathoms, while 20 miles further east it is only 930 fathoms. These soundings of 930 and 1,000 fathoms not improbably indicate the ridge on which Flat Rock, Barren Island, and Narcondam are situated. The 990 and 1,284 fathom soundings must indicate the trough between the ridges; for to the west of the latter lies the Nicobar Group, and to the west of the former, in Lon. $94^{\circ} 20' E.$, we find a depth of 975 fathoms, doubtless indicative of the western or Indian Ocean slope of the Nicobar-Sumatra ridge, since 25 miles further north, in Lon. $94^{\circ} 26' E.$, we have a sounding of 760 fathoms indicating the crest of that ridge. The soundings referred to are shown on the two maps that accompany this paper.

There is, perhaps, some connection between the depth of the rift separating Narcondam from Barren Island, and the fact that from Barren Island itself southwards the volcanoes either still are, or have till recently, been active, while those from Narcondam northwards have long been extinct. This has a certain bearing on another controverted point. Von Bach, as has been already stated, recognised the Sunda volcanic line

* Wallace, *Island Life*, 423 (map).

as extending to, but not beyond, Barren Island. To Blanford is due the merit of having upset the fanciful hypothesis of the further extension of the line across the Arracan Yomah, and of having suggested its probably true northern continuation. More recently it has been proposed* by Berghaus and others to sub-divide the extended Sunda line of Blanford into a Sunda Range proper, ending at the northern limit of Sumatra, and a Pegu Range, containing Barren Island, Narcondam, Popah and Han-shuen-shan. But it is obvious that if any sub-division be necessary, the one proposed by Berghaus is erroneous. A sudden deep gap in the line, with the further character of activity to the south of it, and non-activity to the north, is a much more natural cleavage than merely a number of miles of intervening sea, the nature of whose bottom is unknown or has been misunderstood. If therefore Berghaus be justified in differentiating a Pegu Range, it is clear that Barren Island must be excluded from it, and that we must return to Von Buch's view, that Barren Island is the most northerly member of the Sunda Range. The Pegu Range of very old and long extinct volcanoes begins then at Narcondam, and extends at least as far as south-western Yunnan.

The biological interest of these islands is not so great as the physiographical, because, whether the ridge here postulated exists or not, there is little doubt that these sub-ærial portions never have been connected with any of the adjacent lands. If Flat Rock has ever been sub-ærial, and in a fit condition to shelter air-breathing creatures and support vegetation, it is so no longer; how great soever may be the antiquity of the outer cone of Barren Island, it is probable from its configuration, that at one time it has been the scene of a catastrophe like that which in 1883 devastated Krakatau and totally destroyed its animal and vegetable life. The only one that, from its topography, has evidently remained for many ages in its present condition is Narcondam. Already the writer has laid before this society some notes on the Fauna of the islands†; it remains now to be seen whether the biological facts indicated by their Flora are in agreement with the deductions that should follow from their physiographical configuration.

All the plants found in the two islands are enumerated in the list that follows; running numbers are added to the locality so as to show at a glance how many species occur in each. In the discussion that succeeds the list the peculiarities of each island are dealt with before their common characteristics are considered.

* Stieler: Hand Atlas, sheet 8.

† Prain: Proceedings Asiat. Soc., Bengal, 1892, p. 109.

PLANTS COLLECTED IN NARCONDAM AND BARREN ISLAND.

I. MENISPERMACEÆ. I.

1. ANAMIRTA COCCULUS W. & A. Narcondam (1).
India, Indo-China, Malaya.
2. CYCLEA PELTATA H F. & T. Barren Island (1).
Andamans, Nicobars, Burma,
3. ANTITAXIS CALOCARPA Kurz. Narcondam (2), common.
Andamans and Nicobars.

II. CAPPARIDÆÆ. II.

4. CAPPARIS SEPIARIA Linn., var. GRANDIFOLIA Kurz. Narcondam (3);
Barren Island (2); common.
Andamans, Burma, Malaya, the variety does not occur in India.
5. CAPPARIS IENERA Dalz., var. LATIFOLIA H f. & T Narcondam (1).
Andamans, Tenasserim; the variety does not occur in India.

III. VIOLARIÆÆ. —

6. ALSODEIA BENGALENSIS Wull Narcondam (5).
Assam, Burma, Andamans, Nicobars

IV. GUTTIFERÆÆ. —

7. CALOPHYLLUM INOPHYLLUM Linn. Narcondam (6); beach-forest.
Mascarene Isds.; S. E. Asia; Australia; Polynesia.

V. MALVACEÆÆ. III.

8. HIBISCUS TILIACEUS Linn. Narcondam (7); Barren Island (3).
Cosmopolitan on tropical sea-shores.
9. THESPESIA POPULNEA Corr. Narcondam (8).
On tropical coasts throughout the Eastern Hemisphere.
10. BOMBAX INSIGNE Wall., var. POLYSTEMON Prain; var. nov. caudice
armata, foliolis 7-9, sessilibus anguste lanceolatis, subtus glaucoscenti-
bus, staminibus plurimis (circa 700); capsula 3 5-4 poll. longa: flori-
bus rubris. Narcondam (9); common.
India, Indo-China, Andamans, Malaya; this variety endemic.

There has been some confusion as regards the Asiatic species of *Bombax*; the writer, therefore, takes this opportunity of giving diagnoses of all of them. His excuse for doing so in this place, is that it was the difficulty of localising this tree that led to the study of the genus.

BOMBACES ASIATICÆ.

Arbores (ordinis MALVACEARUM) grandes, saltem juniores caudice armatæ foliis digitatis; calyce coriaceo; stylo simplici; fructu capsulari, segmentis 5; seminibus longioribus; endocarpio involutis.

Fructus segmentis crassissime coriaceis, seminibus sarcinis

lana propriis distincte involutis; cortice dia viridi: tubo staminali 1-seriali, segmentis 5, 1-3-antheris, petalis alternis; floribus minoribus sordide luteo-albis... *Bombas pentandrum* (*Eriodendron anfractuosum*).

[In India peninsulari et in insulis Andamanensibus, indigona et sylvestris; in India boreali, in Indo-China et praesertim in Malaya late culta et forsitan inquilina.]

Fructus segmentis lignosis, lana endocarpii vix in sarcinis distinctis segregata; cortice mox cinerascens; floribus maximis, saepissime rubris:—

Tubo staminali 5-seriali, serie interiori segmentis 5, 2-antheris, petalis alternis, cum serie altera staminibus simplicibus, 1-antheris, 10 per paria petalis oppositis fascem centralem stylum amplectentem formante; ceteris in phalangibus 2-cruralibus 5, petalis oppositis dispositis, staminibus phalangium singularum sub-12, omnibus binis 1-antheris; foliolis longius petiolulatis, laminis acuminato-caudatis subtus viridibus; stylo longibrachiato; capsula velutina *Bombas malabaricum*.

[In India peninsulari et boreali, in China australi et Indo-China, in archipelago Malayano, insulis Philippinensibus et Australia boreali-orientali frequens]

Tubo staminali multiseriali, staminibus omnibus binis 1-antheris, serie interiori (forsan cum serie altera tantum speciei praecedentis comparanda) staminibus 20 petalis oppositis annulum stylum amplectentem formante; ceteris in phalangibus 2-cruralibus 5, petalis oppositis dispositis, staminibus phalangium singularum numerosis; foliolis brevo petiolulatis vel sessilibus, laminis acutis; stylo brevibrachiato; capsula glabra *Bombas insigne*.

[In India peninsulari occidentali; in Indo-China et in Malaya]

Bombas pentandrum and *B. malabaricum* are wonderfully uniform in the number and arrangement of the elements of their staminal whorl; *B. insigne*, while equally uniform as regards the arrangement, varies considerably as regards the number of stamens in its phalanges. The subjoined key shows the distinguishing features and relative position of the most important of these varieties.

Tubo staminali ovario plus duplo longiore
foliolis subsessilibus late lanceolatis,
subtus viridibus glabris; floribus albis;
(capsula ignota)

Bombas insigne, SUB-SP. *anceps* (*B. anceps* Pierre). *B. malabarici* var. *albiflora* Wall. [Cat. n. 1840/3 et 1840/4] vel ad hanc sub-speciem, vel ad *B. insignis* gemmini var. *albam* referenda est.

[Burma (Shan); Cochin-China.]

Tubo staminali ovario vix longiore *Bombax insigne*, subsp. *genuina*.Staminibus phalangium cruralibus
utrinque circa 20:—Staminibus phalangium singularum
inter-cruralibus circa 30, capsula
(unius ignota), 10-12-pollicari:—Foliolis subsessilibus late lanceo-
latis vel obovato-mucronatis,
subtus glaucescentibus; flori-
bus rubrisvar. *typica* (*B. insigne* Wall.; *B. fes-*
tivum Wull. [Cat. 1841]).

[Chittagong; Arracan; Pegu.]

Foliolis subsessilibus late lanceo-
latis, subtus viridibus gla-
bris; floribus albisvar. *alba* (*Salmalia malabarica*
Hort. Bogor., nequaquam Schott.).[Java, culta; forsan Burma (*vide supra B. anceps*).]Foliolis brevo petiolulatis an-
gusto lanceolatis, subtus
glaucescentibus; floribus ru-
brisvar. *andamanica*.

[Andamans; ins. Cocos].

Foliolis brevo petiolulatis an-
gusto lanceolatis, subtus
puberulis; (florum colore
ab autore neglecto; capsula
ignota)var. *cambodiensis* (*B. cambodiense*
Pierre).

[Cambodia.]

Staminibus phalangium singularum
intercruralibus circa 50, capsula
10-12-pollicari, foliolis subsessi-
libus late lanceolatis, floribus ru-
brisvar. *Wightii*.

[India; in prov. Kanara, Anamallai, Malabar.]

Staminibus phalangium singularum
intercruralibus circa 90; capsula
2-4-pollicari tantum; foliolis
sessilibus anguste lanceolatis, sub-
tus glaucescentibus; floribus ru-
brisvar. *polystemon*.

[Narcondam.]

Staminibus phalangium cruralibus utrin-
que 10; phalangium singularum in-
tercruralibus circa 30; capsula 10-12-
pollicari; foliis brevo petiolulatis

lancoolatis subtus viridibus glabris,
floribus viridescens *var. larutensis*

[Perak; prov. Larut: forsan etiam in archipelagine Malayana
 apud Priaman].

It will be noted that the writer is unable to perpetuate the generic rank (*Eriodendron*) assigned by DeCandolle to the Linnean *Bombax pentandrum*. When the differences in the staminal columns of the three 'species' here recognised are reduced to the simplest possible terms, we observe that in *B. pentandrum* this whorl consists of but one element, the items of which are alternate with the petals; that in *B. insignis*, likewise, there is but one element, the items of which are opposite the petals; that in *B. malabaricum*, on the other hand, both these elements occur. Either, therefore, *Bombax malabaricum* and *Bombax insignis* typify two genera as distinct from each other as *Eriodendron* is from either; or, as is here proposed, all three are congeneric. In another place the writer hopes to show that he is right in thinking, with Schumann, that *Pachira* does not deserve to be removed generically from *Bombax*; that he is justified in further reducing *Choisya* to *Eriodendron*, and therefore also to *Bombax*; and is entitled to believe, with Willdonow, that the characters which separate *Adansonia* from *Bombax* are too trivial to be generic.

On the other hand, it will be noted that the material of some of the forms included in *B. insignis* is not yet complete, and it will be readily understood that writers who recognise as distinct the 'genera' referred to in the preceding paragraph, will be still more apt to treat as specifically separable the various forms of *B. insignis* here defined. No work on Indian Botany hitherto published notes *B. insignis* as Indian; the tree, when mentioned, is stated to occur only in Indo-China.

VI STERCULIACEÆ. IV.

11. *SIRCUITA RUBIGINOSA* Vent., *var. GLABRESCENS* King. Narcondam (10); Barren Island (1).

Andamans and Nicobar coasts, general; the variety only.

— *HERITIERA LITTORALIS* Dryand. Narcondam, fruits on beach, E. Bay; Barren Island, fruits on beach at Landing-place Cove: not found growing in either island.

VII. TILIACEÆ. — .

12. *GREWIA LÆVIGATA* Vahl. Narcondam (11); in leaf only.
 Africa; India, Burma, Malaya; Australia.

VIII. RUTACEÆ. — .

13. *GLYCOSMIS PENTAPHYLLA* Corr. Narcondam (12).
 India, Indo-China, Malaya.

IX. BURSERACEÆ. V.

14. *GARUGA PINNATA* Roxb. Narcondam (13); Barren Island (5); in both islands common.

India, Burma, Malaya.

— *QANARIUM EUPHYLLUM* Kurz. Narcondam?

The leaves of this species occur in Herb. Calcutta, and are given as from

Narcondam, on the authority of the Andaman Deputation of 1886, by whom the specimen was collected; the writer did not see the tree in 1891. As the deputation visited the Coco Group (where the species does occur) as well as Narcondam, and as there are many other errors of locality on the tickets of their collection, the species, though here mentioned, is not formally included in the list.

x. MELIACEÆ. —.

15. *AMOORA ROHITUKA* W. & A. Narcondam (14).
India, Burma, Malaya.
16. *AMOORA DECANDRA* Hiern. Narcondam (15).
Central and Eastern Himalaya, Malaya
- *CARAPA MOLUCCENSIS* Lamk. Narcondam, seeds on beach, E. Bay.

xi. OLACINÆÆ —.

17. *CANSTERA RHEDEI* Gmel. Narcondam (16).
India, Burma, Malaya, N. Australia, S China.
18. *APODYTES ANDAMANICA* Kurz. Narcondam (17).
Andamans.

xii. RHAMNÆÆ vi.

19. *COLUBRINA ASIATICA* Brogn. Narcondam (18); Barren Island (6)
Africa, India and Ceylon; Burma, Malaya, N. Australia.
20. *GOVANIA LEPTOSIACHYA* Brogn. Narcondam (19), very plentiful.
India, Burma, Malaya.

xiii. AMPELIDÆÆ. vii.

21. *VITIS REPENS* W. & A. Barren Island (7), very common
India, Burma, Malaya.
22. *VITIS CARNOSA* Wall. Narcondam (20), common.
India, Burma, Malaya
23. *VITIS LANCEOLARIA* Roxb. Narcondam (21).
India, Indo-China, Malaya.
24. *LEEA SAMBUCINA* Willd. Narcondam (22); Barren Island (8).
India, Burma, Malaya.

xiv. SAPINDACEÆ. viii.

25. *ERIOGLOSSUM EDULE* Bl. Narcondam (23), common; Barren Island (9).
India, Burma, Malaya; N. Australia.
 26. *ALLOPHYLUS COBBE* Bl. Narcondam (24), at Coco Bay.
India, Burma, Malaya.
 27. *DODONÆA VISCOSA* Linn. Barren Island (10), common in the valley south of the lava.
- Common in the tropics.

XV. ANACARDIACEÆ. IX.

28. *ODINA WODIER* Roxb. Narcondam (25), very common.
India, Indo-China.
29. *SEMECARPUS HETEROPHYLLA* Bl. Narcondam (26); Barren Island (11).
Indo-China, Andamans, Malaya.

XVI. LEGUMINOSÆ. X.

30. *DESMODIUM POLYCARPON* DC. Narcondam (27); Barren Island (12).
East Africa; S.-E. Asia; Polynesia; Japan and China.
31. *ARRUS PRECATORIUS* Linn. Narcondam (28); Barren Island (13).
Cosmopolitan in the tropics.
32. *ERYTHRINA INDICA* Lamk. Narcondam (29), coast, Anchorage Bay.
India, Burma, Malaya.
33. *MUCUNA GIGANTEA* DC. Narcondam (30), common.
India, Indo-China, Malaya; Polynesia.
34. *CANAVALIA TURGIDA* Grah. Narcondam (31), Coco and East Bays.
India, Indo-China, Malaya.
35. *VIGNA LUTEA* A. Gray. Narcondam (32), on coast.
Cosmopolitan in the tropics.
36. *PHASEOLUS ADENANTHIUS* G. F. Mey. Narcondam (33), abundant on
beach at East Bay.
Cosmopolitan in the tropics.
37. *DALBERGIA TAMARINDIFOLIA* Roxb. Barren Island (14).
India, Indo-China, Malaya.
38. *DALBERGIA MONOSPERMA* Dalz. Narcondam (34), coast north of
Anchorage Bay.
India, Indo-China, Malaya; Australia; China.
39. *DERRIS SCANDENS* Benth. Narcondam (35), East Bay, in sea-fence.
India, Indo-China, Malaya; Australia; China.
40. *PONGAMIA GLABRA* Vent. Barren Island (15), one tree behind the
beach at the landing-place, and close to the lava.
Mascarene Ids; India, Indo-China, Malaya; Australia; Polynesia.
41. *CÆSALPINIA BONDUCELLA* Flem. Narcondam (36), Coco Bay.
Cosmopolitan in the tropics.
42. *ENTADA SCANDENS* Benth. Narcondam (37).
Cosmopolitan in the tropics.
43. *ACACIA CONCINNA* DC. Narcondam (38); Barren Island (16); common.
India, Indo-China; China.

XVII. COMBRETACEÆ XI.

44. *TERMINALIA CATAPPA* Linn. Narcondam (39); Barren Island (17).
Andamans, Malaya.

This is comparatively scarce in Narcondam, but on Barren Island it is na-

doubtedly the most numerously represented tree present. Though really a littoral species, it is not here confined to the shore, but extends from base to summit of the outer cone on both sides wherever there is soil suitable for it to grow. Its general dispersal in the island has been largely assisted by the rats; they carry off the fruits in order to eat the fleshy outer portion.

45. *GYROCARPUS JACQUINII* Roxb. Narcondam (40).

Africa; India, Indo-China, Malaya, Polynesia: not in the Mascarene Islands or E. Africa.

XVIII MYRTACEÆ. XII.

46. *EUGENIA JAMBOLANA* Linn. Barren Island (18), very common.

India, Indo-China, Malaya; Australia.

47. *DARRINGTONIA SPLENDIDA* Forst. Narcondam (41)

Ceylon; Andamans, Malaya; Australia; Polynesia.

The fruits of this species were picked up on the beaches in Barren Island, but the tree itself was not found growing.

XIX. MELASTOMACEÆ — .

48. *MECOSTEMA FOLIOLATA* Roxb. Narcondam (42).

Ceylon; Indo-China, Andamans, Malaya, Philippines

XX. CUCURBITACEÆ. — .

49. *TRICHOSANTHES PALMATA* Roxb. Narcondam (43).

India, Indo-China, Malaya; Australia, Japan and China

XXI RUBIACEÆ. XIII.

50. *OLDENLANDIA CORYMBOSA* Linn. Barren Island (19), in the crater.
America; Africa; India, Indo-China, Malaya.

51. *MICSELENDIA MACROPHYLLA* Linn. Barren Island (20), common.
Indo China, Andamans.

This plant, which is common in the valley between the cones, close to the lava, is one of the species reported by the Deputation of 1866, flowering specimens collected then are preserved in the Calcutta Herbarium, but are noted as being from Narcondam, not Barren Island. The species does not appear to occur in Narcondam, for the plant was carefully looked for there. The mistake on these tickets, which requires to be pointed out, since some of the specimens collected in 1866 may have reached Herbaria in Europe, is nevertheless a fortunate one, as it first called the attention of the writer to the fact that, though this Deputation only reported on Barren Island (*Proc. As. Soc., Beng.*, 1866, 215), it visited Narcondam also. The interest of this fact will be shown in discussing the presence of the Coco-nut.

The species has here, owing to its situation, developed a shrubby habit, but careful examination of the complete material obtained by the writer, leads him to conclude that it cannot be looked upon as even varietally distinct.

52. *GUSTIARDA SPLECIOSA* Linn. Narcondam (14)
Cosmopolitan in the tropics.
53. *IXORA BRUNNESCENS* Kurz. Narcondam (45), and Barren Island (21), common on the coasts.
Andamans.
54. *IXORA CLINEFOLIA* Roxb. Barren Island (22), within outer cone.
Indo-China.
55. *MORINDA CIRRIFOLIA* Linn, var *PACIFICATA* H f. (sp Roxb.) Narcondam (46), very common everywhere, from sea-level to the top of the hill, at 2300 feet elev., Barren Island (23), common.
India, Indo-China, Andamans.
56. *PIDURIA IGITIDA* Linn. Narcondam (17).
India, Burma, Malaya.

XVII. COMPOSITÆ XIV

57. *VERNONIA DIVERGENS* Benth. Narcondam (18), on coast.
India, Indo-China.
58. *BIUMIA GLOMERATA* DC. Narcondam (49), rocks, west coast
India, Indo-China, Malaya, China
59. *BIUMIA FACINIATA* DC. Narcondam (50), rocks east coast
India, Indo-China, Malaya, China
60. *BIUMIA MYRIOPHYLLATA* DC. Narcondam (51), at 1500–1800 feet.
Eastern Himalaya, Indo-China, Andamans
61. *PICTIA INDICA* Less. Narcondam (52), and Barren Island (24), on coasts, common.
India, Indo-China, Malaya; China
62. *WIPITIA SCANDENS* C. B. Clarke. Narcondam (53), common on coasts, Barren Island (25), coasts.
India, Indo-China, Malaya.

XVIII. GOODENOVIÆ XV.

63. *SCYTOA KERNIGH* Vahl. Narcondam (54), Barren Island (26).
India, Indo-China, Malaya, Australia; Polynesia.

XIV. MYRSINÆ XVI.

64. *ARDISIA HUMILIS* Vahl. Narcondam (55); Barren Island (27).
India, Indo-China, Malaya; China.

XV. SAPOTACEÆ. —.

65. *SIDROXYLON FERRUGINEUM* H. & A. Narcondam (56).
Malaya, Andamans; China.

This is another of the species obtained by the Deputation of 1886, on this occasion the labels are correct. The form present here has unusually large leaves—in young trees they are 80 in. long by 12 in. across.

66. *Diospyros Kurzii* Hiern. Narcondam (57).
Andamans and Nicobars.

xxvi. APOCYNÆÆ xvii.

67. *Aganosma marginata* G Don. Barren Island (28), very common
in the valley between the cones, to the south of the lava.
Indo-China, Malaya.
68. *Anodendron paniculatum* A. DC Narcondam (58).
India, Indo-China, Malaya.

xviii. ASCLEPIADACEÆ. xviii.

69. *Tylophora globifera* H f ? Narcondam (59), in fruit only.
Andamans.
70. *Hoya parasitica* Wall. Narcondam (60), Barren Island (29).
Indo-China, Malaya.
71. *Hoya diversifolia* Bl (*H. orbiculata* Wall.) Narcondam (61);
Barren Island (30).
Indo-China, Malaya.
72. *Dischidia nummularia* R. Br. Narcondam (62).
Indo-China, Malaya; Australia

xix. EBENACEÆ xix.

73. *Mitreola oldenlandioides* Wall Barren Island (31), abundant
underneath a thicket of gregarious *Plurgyia* to the north of the lava at
Landing-place Cove; not seen elsewhere.
India, Burma, Malaya, N. Australia.
74. *Strychnos acuminata* Wall Narcondam (63), once at 1600 feet.
Burma, Andamans.

*xx. CONVULVULACEÆ. xx.

75. *Ipomœa grandiflora* Lamk. Narcondam (64), Barren Island (32).
East Africa; India, Indo-China, Malaya, Australia, Polynesia.
76. *Ipomœa denticulata* Choisy Narcondam (65), at East Bay.
Mascarene Islands, Laccadives and Ceylon, Andamans, Indo-China,
Malaya, Australia, Polynesia
77. *Ipomœa turpethum* R. Br. Narcondam (66), in the bed and round
the edges of a small dry lagoon in the beach-forest at East Bay.
Mascarene Islands, India, Indo-China, Malaya, Australia, Polynesia.
78. *Ipomœa biloba* Forsk. Narcondam (67), Barren Island (33).
Cosmopolitan in the tropics.
79. *Ipomœa vitifolia* Sw. Narcondam (68), Coco Bay, abundant.
India, Burma, Malaya.
80. *Convolvulus parviflorus* Linn. Narcondam (69), Anchorage Bay.
Africa; Indo-China, Malaya; Australia.

— SOLANACEÆ. xxi.

81. *PHYSALIS MINIMA* Linn. Barren Island (34), on a small landslip on outer cone, south of Landing-place Bay.

Cosmopolitan in the tropics.

— SCROPHULARINEÆ. xxii.

82. *VANDELLIA CRUSTACEA* Benth. Barren Island (35), on the small landslip, and also inside the crater.

Africa; India, Indo-China, Malaya; Australia, Polynesia; China.

xxx. BIGNONIACEÆ. xxiii.

83. *OROXylum INDICUM* Vent. Narcondam (70); Barren Island (36). India, Indo-China, Malaya.

xxxi. ACANTHACEÆ. xxiv.

84. *FRANTHEMUM SUCCHIFOLIUM* Kurz. Narcondam (71); Barren Island (37). Andamans, Nicobars.

xxvii. VERBENACEÆ. xxv.

85. *CALLICARPA ARBOREA* Roxb. Narcondam (72); Barren Island (38). India, Burma, Malaya.
 86. *PRIMA INGLORIFOLIA* Linn. Narcondam (73); Barren Island (39). India, Indo-China, Andamans.
 87. *CLERODENDRON INFERME* Gaertn. Narcondam (74), at East Bay. India, Indo-China, Andamans.

xxxiii. NYCTAGINEÆ. xxvi.

88. *BOERHAAVIA REPENS* Linn. Narcondam (75); Barren Island (40); common on rocks on the coast.

Cosmopolitan in the tropics.

89. *PISONIA ACULEATA* Linn. Narcondam (76), not very plentiful. Cosmopolitan in the tropics.

90. *PISONIA ALBA* Span. Narcondam (77), beach-forest, E. Bay. Laccadives, Ceylon; Andamans, Malaya.

91. *PISONIA EXCELSA* Bl. Narcondam (78), abundant, E. Bay. Andamans, Malaya.

xxxiv. ARISTOLOCHIACEÆ. —.

92. *ARISTOLOCHIA TAGALA* Cham. & Schlecht. Narcondam (79). India, Indo-China, Malaya; China.

xxxv. MYRISTICACEÆ. —.

93. *MYRISTICA GLAUCA* Bl. Narcondam (80). Indo-China, Andamans, Malaya.

xxxvi. EUPHORBIACEÆ. xxvii.

94. *BRIDELIA TOMENTOSA* Bl. Narcondam (81).
India, Indo-China, Malaya, Australia, China.
95. *ACTEPHILA EXCELSA* Muell.-Arg. (*A. javensis* Miq.) Narcondam (82); gregarious and plentiful, the commonest species in the island.
India, Burma, Malaya
96. *PHYLANTHUS EFFICILLATUS* Poir. Barren Island (41), to the south of the lava, near inner base of outer cone
Africa, India, Burma, Malaya, China.
97. *GLOCHION CALOCAKIUM* Kunz. Narcondam (83), and Barren Island (42); common on rocks on the coast.
Andamans and Nicobars.
98. *FLUFUGIA MICROCARPA* Bl. Barren Island (43), gregarious and plentiful between the cones to the north of the lava.
Africa, India, Indo-China, Malaya, Australia, China
99. *BREYERIA RHAMNODIS* Muell.-Arg. Narcondam (81).
India, Burma, Malaya, China.
100. *CYCLOSTEMON MACROPHYLLUS* Bl. Narcondam (85).
India, Andamans, Malaya.
101. *CYCLOSTEMON ASSAMICUS* Hook. f. Narcondam (86).
Eastern Himalaya, Assam, Andamans
102. *BLACHIA ANDAMANICA* Hook. f. Narcondam (87), Anchorage Bay. Andamans.
103. *MALLOPUS ANDAMANICUS* Hook. f. Narcondam (88), gregarious and common, but less so than *Actephila excelsa*.
Andamans.
104. *MACABANGA TANARIUS* Muell.-Arg. Narcondam (89), Barren Island (44).
Andamans, Malaya.
105. *GELONIUM BIFARIUM* Roxb. Narcondam (90), plentiful on the coast; Barren Island (45).
Andamans, Malaya.

xxvii. URTICACEÆ. xxviii.

106. *TREMA AMBOINENSIS* Bl. Narcondam (91), common on rocky coasts and inland also; Barren Island (46), general, some stunted examples occur even on the bare inner cone.
Eastern Himalaya, Indo-China, Andamans, Malaya.
107. *FIGUS GIBBOSA* Bl., var. *CUSPIDIFERA* King. Barren Island (47).
India, Indo-China, Malaya.
108. *FIGUS GLABERRIMA* Bl. Narcondam (92); one of the tallest trees.
Himalaya, Indo-China, Malaya.

109 *FIGUS BENJAMINA* Linn. Narcondam (93), seeds brought have germinated at Calcutta.

India, Indo-China, Malaya.

110. *FIGUS RUFUSA* Linn, *var NITIDA* King (*sp. Thunbg*) Narcondam (94), and Barren Island (48), very common on both islands

India, Indo-China, Malaya, Australia, New Caledonia, China.

111. *FIGUS NIVOSA* Roth Narcondam (95), at 1,500 feet elevation.

India, Indo-China, Malaya, China.

112. *FIGUS RUMPHII* Bl Narcondam (96), and Barren Island (49), very plentiful.

India, Indo-China, Malaya.

113 *FIGUS CARIOSA* Willd Narcondam (97), beach-forest at East Bay, a very tall tree

India, Indo-China, Malaya

114 *FIGUS BRIVICORNIS* Miq. Narcondam (98), very common, Barren Island (50), this is one of those species in which many of the branchlets are hollow and afford homes for species of ants

Andamans, Malaya.

115 *FIGUS HISPIDA* Linn, *var TILICA* Barren Island (51), in the valley between the cones, at the inner base of the outer cone.

India, Indo-China, Malaya

var DAMONUM King (*sp. Koenig*) Narcondam (99), and Barren Island (51), frequent

India, Indo-China, Malaya

116. *FIGUS VARIIGATA* Bl. Barren Island (52), on the hill at the west end of southern part of outer cone, overlooking Landing-place Bay.

Indo-China, Malaya.

117 *ANTHURUS TOXICARIA* Leschen Narcondam (100), not common.

India, Burma, Malaya.

The leaves of the form present here exactly match those of Malayan specimens named *A. rufa* by Miquel.

118 *ARTOCARPUS LAKOOCHA* Roxb Narcondam (101).

India, Indo-China, Malaya

119. *BALHMERIA MALABARICA* Wedd Narcondam (102); very plentiful.

India, Indo-China, Malaya.

120 *PIPTERIS VELUTINUS* Wedd Narcondam (103), plentiful.

Nicobars, Malaya; Polynesia.

— . ORCHIDACEÆ. XXIX.

121. *DENDROBIUM* sp. Barren Island (53), rather common on trees ~~on~~ inside of outer cone.

122. *PHOLIDOTA IMBRICATA* Lindl. Barren Island (54), inside crater.
India, Burma, Malaya.

XXXVIII. SCITAMINEÆ. — .

123. *MUSA SAPIENTUM* Linn. The *Plantain*. Narcondam (104), a large grove behind the Coco-nut trees at Coco Bay.
Cosmopolitan in the tropics, cultivated.

No doubt deliberately introduced for the benefit of possibly ship-wrecked mariners, though it is not quite clear who planted it; probably (see under *Cocos nucifera*) it has been introduced from the Andamans, and perhaps dates from 1866.

XXXIX. DIOSCOREACEÆ. XXX.

124. *DIOSCOREA SATIVA* Linn. Narcondam (105) Barren Island (55).
India, Burma, Malaya; Australia.
125. *DIOSCOREA GLABRA* Roxb. Barren Island (56); common.
India, Burma, Malaya.

XI. LILIACEÆ. XXXI.

126. *DRACENA ANGUSTIFOLIA* Roxb. Narcondam (106), Anchorage Bay.
Indo-China, Malaya, Australia.
127. *GLORIOSA SUPERBA* Linn. Barren Island (57), E. coast near sea.
Africa; India; Indo-China, Malaya.

XII. COMMELINACEÆ. — .

128. *POLLIA ACLISIA* Hassk. Narcondam (107), very abundant on slopes overlooking south end of Anchorage Bay.
Eastern Himalaya, Indo-China, Malaya.

XIII. PALMEÆ. XXXII

129. *CARYOTA MITIS* Lour. (*C. sobolifera* Wall.) Narcondam (108).
Indo-China, Malaya.
130. *COCOS NUCIFERA* Linn. Narcondam (109), many at Coco Bay, a few at Anchorage Bay, one, not yet bearing, at E. Bay; Barren Island (58), thirteen trees counted from the offing, behind the *Pandanus* fence at Anchorage Bay; none seen elsewhere.
India; Malaya; Polynesia; America.

The introduction of this tree into these islands is a question of some interest. The tree at E. Bay, Narcondam, has no doubt been produced from a nut washed round from Coco Bay; in all likelihood the trees at Anchorage Bay have been derived from the same source. The trees at Coco Bay itself may have originated from nuts brought from the Coco Group by a surface-current sweeping from the Sea of Bengal, through the Prepara Channels, from N.-E. to S.-W. across the Andaman Sea; but as they are associated, where they occur, with a grove of *Musa sapientum* (which must have been deliberately introduced), it is not unreasonable to suppose that the two species were introduced together.

The question is, when did they first appear? Hume and Ball landed in 1878 at the very spot where they are now so plentiful, yet no mention is made by either writer of their presence. As Ball speaks of some of the species observed at this Bay, and as Hume describes the Coco-nuts seen by him, shortly after, at the Cocos, it is hard to believe that the trees were there in 1873. Again, Mallet makes no reference to them in 1884; the maps accompanying his account indicate that he and Hobday landed at Anchorage Bay, and he may not therefore have seen the large grove at Coco Bay; but those at the beach where he landed should have been evident to him. Mallet's paper is however confined to the geology and topography of the island, and hardly alludes to its vegetation. But Hume, Ball, and Mallet are equally silent regarding the Coco-nuts on Barren Island which we know to have been present in 1866, for they were seen by the Andaman Deputation—whose report has been already referred to (p. 56)—behind a beach, to which they still seem confined. As these three writers failed to notice Coco nuts in Barren Island, where we know they existed at the time of those visits, there is no reason why Coco nuts should not have been present then in Narcondam also. The Andaman Deputation in their Report (*Proc. As. Soc. Beng.*, 1866, 215), say: "We brought from Port Blair with us a number of Cocoa nuts, Plantain trees, and Pine-apple cuttings, and these we planted on the ground from which the grass had been cut, in hopes that they might be of use to some future visitors."* We have seen, in connection with some of the species in this list, that the same deputation visited Narcondam also, though it did not report on that island; nothing therefore is more probable than that the deputation did there what it had done on Barren Island, and that to its members belongs the credit of having introduced, at least, the Plantains. But the Coco-nut trees are so much more numerous, and so much larger on Narcondam than on Barren Island, that one finds it difficult to think they only date from 1866. It is unfortunate that the deputation did not find it necessary to report on Narcondam as well as on Barren Island; had they done so, there is little doubt the report would have mentioned any Coco-nuts that were present. However, even if the Coco-nut trees were already there in 1866, the writer is inclined to think that their origin must still be due to introduction by some previous visitor.

The Coco-nuts on Barren Island may be supposed to have originated from nuts swept up by a strong surface-current that flows from the south-west, and that therefore would bring drift from the Nicobars where Coco-nuts are plentiful. But it is more likely that the trees have been introduced, though involuntarily, by man. For though there is reason to believe that no one has ever landed at this particular beach, this bay affords the only safe anchorage in the island, and it is therefore more probable that these trees have sprung from nuts that have fallen overboard from

* There was no trace of any of these in the locality indicated during the writer's visit, a circumstance not surprising; because, in the first place, the situation is not over-suitable for such species, and, besides, goats have been since then introduced into the island! It may be mentioned that no one at Port Blair in 1891 knew of the existence of Coco-nuts in Narcondam, and the writer consequently took a number with him in order to plant them, only to find the act unnecessary. And, bearing in mind the state of affairs in Great Coco (*Journ. As. Soc., Beng.*, ix, pt. 2, 315), he also took fruits of *Carica Papaya* for the same purpose. Should, therefore, subsequent visitors find this species established in the island, they are hereby relieved of the necessity of inventing an hypothesis to explain the circumstance.

some craft lying off this beach, than that they have been brought by the sea from the Nicobars, or that they have been deliberately introduced by man.

XLIII. PANDANACEÆ XXXIII

131 *PANDANUS ODOBATISSIMUS* Linn f Narcondam (110), common at Coco Bay and elsewhere; Barren Island (59), at Anchorage Bay India, Indo-China, Malaya

XLIV. AROIDEÆ —.

132. *AMORPHOPHATIS* (*Candarium*) RIX Prain, *sp. nov.* *tubere* magno depresso-globoso, *cataphyllis* 4, oblongo-lanceolatis, *folii* petiolo parum asperato vix maculato, *lamina* trisecta segmentis irregulariter dichotomis iterumque pinnatisectis, *pinnulis* (imis nonnunquam exceptis) ad costulas decurrentibus, ovato-oblongis, ciliato-acuminatis, nervis supra impressis, subtus prominentibus, sinibus angustis, *pedunculo* crasso florifero brevi, fructigero elongato, *spatha* juniore cataphyllis oblecta, matura tubo infundibulari crasso in laminam late campanulatam margine tandem reflexa undulato-plectam postice acuminatam expanso, *spadue* *spatha* subduplo longiore erecto, stricto, crasso, *inflorescentia* tubo *spatha* subinclusis, *famina* sursum parum angustata quam *masculam* parum obovicam dimidio longiore, *appendice* crassa conico-pyramidi inflorescentis dimidio longiore et, saltem prope basin, quam eas triplo latiore Narcondam (111), very common.

Tubere diam 9-18 poll, *cataphyllis* spiritaliter dispositis imo exterioro 3 poll, altero 9 poll, tertio 12 poll, summum interiore 19 poll longis, omnibus 2 poll latis, pallide viridibus maculis olivaceis demum tamen subconcoloribus luteis, *peti* 2 5-6 pedali basi ipsa 4 5 poll crasso, sursum spatio brevi ita incrassato ut loco supra solum 4 poll alto crassitudinis 5 pillicaris demum paulatim se contrahat et apud trifurcationem diam 3 5 poll tantum, pallide viridi, maculis olivaceis, demum subconcolore olivaceo, *lamina* diam 5 5 ped, supra olivacea subtus praxina, segmentis singulis 36 poll longis *pinnulis* ultimis 6 10 poll longis his 3-12 5 poll latis, *pedunculo* florifero brevi 2 5 poll tantum longo fructigero ad 30 poll elongato, 1 5-2 poll crasso, juniore pallide viridi maturo purpurascente, *spatha* a latere 16 poll, a basi ad apicem versus 19 poll longa, infra substantia carnosum sursum tennescente, extus concolore pallide viridi intus ad basin verruculosam lutea, supra pallide viridi ibi tamen margine excepto cito flavescente, *spadue* tota 21 5 poll. longa, parte *famina* 4 5 poll longa basi 2 25 poll apice 1 75 poll crassa, (fructigera 7 poll longa et 3 5 poll crassa) ex ovario globosis 0 2 poll diam viridibus, 2-(rarissime 3-)locularibus, sessilibus, subcontiguis, in stylis 0 3 poll longos, luteos contractis, stigmatibus plicatis 2-3-lobis, loculis 1-ovulatis, ovulis semianatropis decurvis, funiculo elongato angulo interiore parum supra basin affixis, in ala placentali circa basin funiculo exoriente et loculum fere totum complente lanixis eodemque amplexis, parte *mascula* 3 poll longa, basi 1 75 poll, apice 3 5 poll crassa, a floribus 4-5-antheris spiritaliter dispositis, antheris singulis *connectivo* sursum parum producto, ellipsoideis sursum angustatis, *appendice* 14 poll longa, hac basi 6 poll crassa,

post anthesin caduca, spongiosa, rugosa, valliculosa, lutea et brunneo-maculata: bacca 1-2-sperma, 0.75 poll longa, hac 0.25-0.35 poll. lata, versus apicem angustata, carnosae, luteae, seminibus pendulis ovatis, trionto basilari & funiculo incrassato spongiosis ceterum embryone corneo semini subconformi cartilagenosis.

This species resembles the Java form, or a variety, of *Amorophallus campanulatus* (*A. campanulatus* Blume Rumphia, 1, 139 t 32, 33, as opposed to *Arum campanulatum* Roxb, Hort Beng, 86) in the conic pyramidal shape of the appendix, but differs in other respects, more particularly in the leaf. It agrees with *A. viridius* Brown (*Bot. Mag.*, 6978) in having the male and female inflorescence of about equal length, but in other respects is very distinct, for *A. viridius* has the dense flowered turbinate male inflorescence, and the short oblong appendix characteristic of Roxburgh's *Arum campanulatum* of which it is probably only a form. The following brief diagnosis† may assist in indicating how very distinct the present plant is from the forms hitherto known —

Petiole hardly verrucosae, male flowers disposed spirally on an inflorescence not wider than the female yellow pyramidal appendix (twice as long as broad, and) one-half longer than the combined inflorescences (male and female inflorescences of equal length, spathe green concolorous) *A. res*

Petiole very verrucosae, male flowers disposed spirally on an inflorescence much wider than the female purplish-brown appendix not so long as the combined inflorescences —

Male and female inflorescences of equal length, spathe green suffused with purple, externally white spotted (oblong appendix not longer than broad) *A. viridius*.

Male inflorescence much shorter than the female, spathe purple concolorous *A. campanulatus*.

Oblong appendix, not longer than broad .. . *Arum campanulatum* Roxb (India)

Pyramidal appendix twice as long as broad *Amorophallus campanulatus* Bl. (Java) ‡

† In connection with this, it may be mentioned that the *Amorophallus* from the Coco Group, mentioned (*Journ. As. Soc., Beng.*, 1x, 2, 333) as related to *A. bulbifer* and *A. tuberculifer*, has since flowered at Calcutta, and has proved, as was then anticipated, to be a very distinct species. As the authors of the other species, have indicated by the specific name the tubercle-bearing habit of the species, the writer proposes for this one the name '*AMOROPHALLUS ONCOPHYLLUS*' Prain. The diagnosis between it and the two species for which it might be mistaken, is as follows —

Stigma sessile, spathe unconstricted, appendix equal in length to the combined inflorescences —

Female inflorescence shorter than the male *A. tuberculifer*.

Female inflorescence as long as the male *A. bulbifer*.

Style distinct, spathe constricted slightly opposite the male inflorescence, appendix twice as long as the combined inflorescences *A. oncophyllus*.

‡ As this paper has been passing through the press, the writer has learned from Sir Joseph Hooker, that he identifies *A. res* with Blume's Java *A. campanulatus*.

133. *POTHOS SCANDENS* Linn. Narcondam (112), on trees; common.
India, Indo-China, Malaya.

xlv. CYPERACEÆ. xxxiv.

134. *CYPERUS PENNATUS* Lamk. Narcondam (113); Barren Island (60).
Africa, India, Indo-China, Malaya.
135. *FIMBRISTYLIS DIPHYLLA* Vahl. Barren Island (61)
America; Africa; India, Indo-China, Malaya; Australia; China.
136. *FIMBRISTYLIS FERRUGINEA* Vahl. Narcondam (114), rocks on coast;
Barren Island (62), tussocks outside inner cone, also inside crater.
India, Indo-China, Malaya.

xlvi. GRAMINEÆ. xxxv.

137. *OPHIOCHLOA BURMANI* Roem & Schult. Barren Island (63).
India, Indo-China, Malaya; China, Japan.
138. *THYSANOTHA ACALIFERA* Nees. Narcondam (115) coasts.
India, Indo-China, Malaya.
139. *POGONATHERUM SACCHAROIDES* Beauv. Barren Island (64), common.
India, Indo-China, Malaya, China

This species is very abundant on the rocky slopes forming the inner side of the outer cone; it is one of the plants collected by the Deputation of 1906, it was also collected in 1846 by Kamphövener, botanist on the Danish Frigate "Galata," whose visit is commemorated by the name 'Galata' having been marked on the large block on the crater. Kamphövener's specimens are in the Herbarium at Copenhagen.

140. *IRCHAMNUM MUTICUM* Retz. Barren Island (65); common.
India, Indo-China, Malaya; Australia, Western Polynesia.

Usually a coast species, this here extends inland and fills the valley between the cones, covering all the bottom of this except the lava stream.

— LYCOPODINEÆ. xxxvi.

141. *LYCOPodium CRENUM* Linn. Barren Island, (66), interior of crater.
Cosmopolitan in the tropics.
142. *PSILOTEUM TRIQUESTRUM* Sw. Barren Island (67), interior of crater.
Cosmopolitan in the tropics.

xlvii. FILICES. xxxvii.

143. *DAVALLIA SOLIDA* Sw. Narcondam (116), on trees in beach-forest.
Andamans, Malaya, Polynesia; Australia.
144. *DAVALLIA SPELUNCE* Bak. Narcondam (117), common.
Africa; India, Indo-China, Malaya; Australia; Polynesia.
145. *ADIANTUM LUNULATUM* Burm. Barren Island (68), common.
Cosmopolitan in the tropics.
146. *TRICHOMANES PYXIDIFERUM* Linn. Narcondam, (118), at 2330 feet.
Cosmopolitan in the tropics.

147 *CHYLIANTHES TENUIFOLIA* Sw. Barren Island (69), dwarf specimens, plentiful within the crater.

India, Indo-China, Malaya, Australia, Polynesia, China

148 *ONYCHIMUM AUREUM* Kaulf. Barren Island (70), occasional.

Himalayas, Indo-China, Malaya, China

149 *PITRIS LONGIFOLIA* Linn. Barren Island (71), a few plants
Cosmopolitan in tropical and sub tropical countries

150 *PITRIS TRACITA* Linn. Barren Island (72), occasional.
Cosmopolitan in the tropics.

151 *ASPLENIUM NIDUS* Linn. Narcondam (119), on trees, rather common.

Macarones Islands, India, Indo China, Malaya, Polynesia

152. *ASPLENIUM LANCEOLATUM* Lamk., var. *LEIOHYLUM* Bak. Narcondam (120), very common on stony hill sides, Barren Island (73)

Africa, India, Indo-China, Malaya, Australia, Polynesia

153 *NEPHRODIUM FIRMANS* J Sm. Narcondam (121), common
India, Indo China, Malaya, Australia, Polynesia, China

154. *NEPHRODIS SUBROSA* Presl. Barren Island (74).
Cosmopolitan in the tropics

155 *POLYPODIUM TRIOPUS* Lamk. Narcondam (122), at 1800 feet.
Africa, India, Indo China, Malaya, Australia, Polynesia

156. *POLYPODIUM ADVASCENS* Sw. Narcondam (123), Barren Island (75)
Africa, India, Indo China, Malaya, Polynesia

157. *POLYPODIUM QUERQUOLIUM* Linn. Narcondam (124), Barren Island (76)

India, Indo-China, Malaya, Australia

158 *ACROSTICHUM ATTENUOLATUM* Willd., var. *SEFOSA* Bak. Narcondam (125), common.

India, Indo-China, Malaya.

159 *ACROSTICHUM COSTATUM* Wall., var. *DELTIGERA*. Narcondam (126);
exactly = Wallich's *Mesocum deltigerum*
E. Himalayas, Indo-China, Malaya

160 *ACROSTICHUM AUREUM* Linn. Narcondam (127); and Barren Island (77), common on rocks on the coast
Cosmopolitan in the tropics in salt marshes

161 *ACROSTICHUM SCANDENS* J Sm. Barren Island (78), near sea.
India, Indo-China, Malaya, Australia, Polynesia.

XLVIII. MUSCI. XLVIII.

162 *NECKERA RUGULOSA* Mitt.* Narcondam (128), at 2330 feet,
Ceylon.

* Examined, and kindly named for the writer by Dr. Brotherus, Heidelberg.

163. *BRYUM CORONATUM* Schwagr. Narcondam (129); Barren Island (79). Cosmopolitan in the tropics.

XLIX LICHENES XXXIX

164. *COLLEMA NIGRESCENS* Achar. Narcondam (130), rather common; Barren Island (80), plentiful.
Cosmopolitan

I FUNGI * VI

165. *POLYPORUS ARISTATUS* Fries. Narcondam (131), Barren Island (81)
Cosmopolitan in the tropics.
166. *POLYPORUS XANTHOLUS* Fries. Narcondam (132)
Cosmopolitan in the tropics
167. *LEZIELLES FLAVIVITILUS* Cooke, *the cilia* vol. 1. Narcondam (132).
Malay Peninsula
168. *DIPLAZIA GHIRCINA* Fries. Narcondam (134), Barren Island (82).
Cosmopolitan
169. *PENIOPHORA PAPIRYNA* Mont. Narcondam (135), Barren Island (83)
Cosmopolitan in the tropics
170. *HIRNOLA POLYTRICHA* Mont. Narcondam (136), Barren Island (84).
Cosmopolitan in the tropics
171. *THELEPHORA INCRISIANA* Pers. Narcondam (137), Barren Island (85).
Cosmopolitan.
172. *RHYTISMA*, sp. Narcondam (138), Barren Island (86); on leaves of *Ficus benicuspis*.
Andamans.

ALGÆ. XII.

173. *CALOTHRIX PULVINATA* Ag. Barren Island (87), on stones in the hot spring on the beach at Landing-place Cove.
Cosmopolitan.
174. *CALOTHRIX TASMANICA* Kg. Barren Island (88); on rocks in bed of torrent on inside of outer cone to the south of the lava.
Indo-China, Malaya; Australia.

§§§ NATURE AND ORIGIN OF THE FLORA.

The list includes 174 species, of which 138 occur in Narcondam and 88 in Barren Island; 86, or 62½%, of the Narcondam plants are absent from Barren Island, while 36, or 41%, of the Barren Island species do not occur in Narcondam; only 52 species—making 37½% of

* Examined, and kindly named for the writer by Mr. G. Massee.

the Narcondam, 59% of the Barren Island flora—are common to the two islands. Of the genera, 111 occur in Narcondam and 75 in Barren Island, but only 48,—43½% of the Narcondam ones, 64% of those in Barren Island—are found in both places. Eleven natural orders present in Narcondam are unrepresented in Barren Island; five present in Barren Island are not found in Narcondam.

As regards *Cryptogams*, the two floras seem very similar, each having the same total number; the natural orders, however, indicate greater diversity of character among Barren Island than among Narcondam *Cryptogams*. There are two *Lycopodiaceæ*, and two *Algae*, not represented in Narcondam; on the other hand, in Narcondam, at the top of the hill are a *Trichomanes* and a *Nickera*, absent from Barren Island. Of the thirteen ferns on Narcondam and 12 on Barren Island, 5 only are common to the two places; the Narcondam ferns belong to 6 genera, the Barren Island ones represent 8 genera. In Narcondam, one of the features of the vegetation is the presence of large beds of ferns; in Barren Island, ferns are scarce.

All the *Cryptogams* are herbaceous, and may all have their presence credited to wind-agency, *Acrostichum aureum*, however, in both islands, and *Acrostichum scandens* in Barren Island, grow only near the sea; both are denizens of mud-flats in the Sunderbuns, the Andamans and throughout Malaya and possibly therefore are sea-introduced.

Of the 46 natural orders of *Phanerogams* in Narcondam, 23 are represented by one species, 12 by two species, 3 by three species, and 3 by four species each; the only orders represented by more than four species, are *Compositæ* and *Convolvulaceæ*, each 6 sp.; *Euphorbiaceæ*, 10 sp.; *Leguminosæ*, 12 sp. and *Utricaceæ*, 13 sp. In the 35 natural orders in Barren Island we find that 21 are represented by one species, 8 by two species, and 2 by three species; the only orders represented by more than three species are *Leguminosæ*, *Rubiaceæ* and *Euphorbiaceæ*, 5 sp. each, and *Urticaceæ*, 7 sp. *Urticaceæ* is thus in both islands the leading natural order; this hegemony is due to the facilities that fruits of the order offer for introduction by frugivorous birds.

Of the 115 Narcondam *Phanerogams*, 33 are trees, 31 are shrubs, 37 are climbing species—woody climbers 16, herbaceous climbers 21; only 5 climbers being armed—and 14 are herbs. Of the 65 Barren Island species, 15 are trees, 17 are shrubs, 16 are climbers—woody 6, herbaceous 10; only 3 armed—and 17 are herbs. There are roughly speaking twice as many trees, shrubs and climbers in Narcondam as in Barren Island; the number of herbaceous species in the latter island is, however, slightly in excess of the number in the former. Of the herbaceous *Phanerogams* seven species are common to both islands; all

are plants that may have been introduced by the sea. Of inland herbaceous species which may have been introduced by fruit-eating or marsh birds, or by the wind, the islands do not have one in common.

In Narcondam there are four *Composite* most probably introduced by wind; a grass, *Thysanotena*, may conceivably have been introduced in the same way. The two remaining herbs are the *Amorphophallus* which, even if in this island it has developed into a distinct form, must have originally been introduced by some fruit-eating bird, and the *Pollia*, which most probably has been introduced by the same agency.

In Barren Island, the wind-introduced species are two orchids and one grass, *Pogonatherum*; *Ischamum muticum* has probably been introduced by the sea. The others have been introduced by birds; *Physalis* and *Mitreola* probably by fruit-eating birds, *Oldenlandia*, *Vandellia* and *Oplismenus* by birds to whose feet or feathers seeds have clung. Except *Pogonatherum*, *Ischamum* and *Mitreola*, the Barren Island herbs are scarce.

The paucity of armed climbers in both islands is striking. The proportion of climbers to erect species is considerably higher in Narcondam, where they form one-third of the whole Phanerogamic flora, than in Barren Island, where they form only one-fourth, and partly in consequence of this, the jungle in Barren Island is opener than in Narcondam. Of the thirty-seven climbers in Narcondam, twelve have undoubtedly been introduced by fruit-eating birds, while one has most probably been introduced by its fruits having stuck to the feathers of some bird; fourteen have been introduced by the sea; six by winds. Of the remaining four species, which are more doubtful, two may be safely assumed to be here sea-introduced species also, one may be put down to the agency of birds, and only one species, the *Dioscorea*, is quite doubtful; perhaps the sea is on the whole the most likely agency.

Similarly, of the sixteen climbers on Barren Island, five are clearly species introduced by fruit-eating birds, to these a sixth probably should be added. Four are species certainly sea-introduced, to these another should probably, and two more should perhaps be added; of wind-introduced species there are three.

Very few of these species are common to both islands, only nine, or about half the Barren Island and one-fourth of the Narcondam climbers being so; of these four are again sea-shore species, and the *Dioscorea* found in both islands may be a fifth of the sea-introduced class. Two, the *Hoya*s, are wind-introductions; one, *Capparis sepiaria*, is certainly; another, the *Abrus*, is probably, a bird-introduced species.

Of the thirty-one Narcondam shrubs, one (*Musa*) has been introduced by man; on the other hand not a single shrub owes its presence

to the agency of wind. As many as seventeen are unequivocally bird-introduced species, and ten are unequivocally sea-introduced species; the remaining three, which are all capsular-fruited *Euphorbiaceae* (*Actephila*, *Moracanga* and *Mallotus*), though not unequivocally sea-introduced, are in all probability species of this class.

Of the seventeen Barren Island shrubs, seven are undoubtedly bird-introduced species, nine are sea-introduced species, one species, *Dodonaea*, is, though somewhat equivocally, to be looked upon as wind-introduced.

There is much greater conformity between the floras as regards this class, thirteen of the Barren Island shrubs occur also in Narcondam, only four being peculiar, all but one of the sea shore, and all but two of the bird-introduced shrubs in Barren Island occur in Narcondam also.

The trees in the two islands have list to be considered. Of the thirty-three in Narcondam twenty-one, or more than three-fifths, have been introduced by birds, two from their fruits having been attached to the feet or feathers, the others, by fruit eating birds, ten may have been sea-introduced, for seven this mode of introduction is undoubted, as regards *Caryota* it is rather equivocal, and the Coconut may have been deliberately introduced, two species are wind-introduced.

Of the fifteen Barren Island trees, nine are bird-introduced species; five are sea-introduced, one has been introduced by wind.

Here again great conformity between the floras is observable, of the fifteen Barren Island trees, ten occur in Narcondam, these include all the bird introduced ones except four, and all but one of the sea-introduced species, one wind-introduced species is common to the two islands.

Among herbaceous species where the equality of numbers promised most agreement, there is therefore greater diversity between the two floras than among the others.

Of the 75 species of *Phanerogams* peculiar to Narcondam, 22 have been introduced by the sea, 12 by birds, and 10 by winds, one species (*Musa*) has been introduced by man. Of the 25 species peculiar to Barren Island, on the other hand 5 have been introduced by the sea, 15 by birds, 5 by winds. Of the 40 *Phanerogams* common to the two islands, 24 are sea-introduced, 13 are bird-introduced, 3 wind-introduced. In the common element of the two floras, the sea-introduced species form the dominant class, being nearly double the bird-introduced species and six times as numerous as the wind-introduced ones. In the special elements, on the other hand, the bird-introduced species form in both instances the dominant class, in Narcondam they are nearly twice as numerous as the sea-introduced and four times as numerous as the wind-introduced species; in Barren Island, they are three times as numerous as either of these kinds.

Materials for a Flora of the Malayan Peninsula.—By GEORGE KING, M. B., LL. D., F.R.S., C.I.E., Superintendent of the Royal Botanic Garden, Calcutta.

[Read June 7th].

No. 5.

ORDER XVI. DIPTEROCARPEÆ.

Resinous trees, rarely climbing shrubs. *Leaves* alternate, simple, quite entire, rarely sinuate-crenate, pinni-nerved, the main nerves bold; stipules usually small and inconspicuous, sometimes larger and persistent, or fugitive, leaving an annular scar, (absent in *Ancistrocladus*). *Flowers* in few- or many-flowered, axillary and terminal racemes or panicles. *Bracts* usually minute or 0, rarely larger and persistent. *Sepals* free, or cohering into a tube surrounding but free from, or more or less adnate to, the base of the ovary and fruit. *Petals* contorted, connate at the base, or free. *Stamens* ∞ , 15, 10 or 5, hypogynous or sub-perigynous, free, connate, or adnate to the petals; filaments short, often dilated at the base; anthers 2-celled, the outer valves sometimes larger, connective often aristate or with an obtuse appendage. *Ovary* slightly immersed in the torus, usually 3- rarely 2- or 1-celled; style subulate or fleshy, entire or with 3 minute stigmatic lobes; ovules anatropous, 2 in each cell, pendulous or laterally affixed (solitary and erect in *Ancistrocladus*). *Fruit* usually nut-like, its pericarp leathery or woody, 1- rarely 2-seeded, surrounded by the variously accrescent calyx of which two or more sepals or lobes are usually developed into linear wings. *Seed* exalbuminous (albumen fleshy and ruminant in *Ancistrocladus*); cotyledons fleshy, equal or unequal, straight or more or less plaited and crumpled, sometimes lobed; radicle directed towards the hilum, usually included between the cotyledons.—*DISTRIB.* Confined (except a few Tropical African species) to Tropical Eastern Asia; genera about 18, species about 250.

Sect. I. EN-DIPTEROCARPEÆ. *Oraries* 3-celled, each cell 2-ovuled: stigmas united, more or less 3-lobed: seeds usually exalbuminous the outer segments of the fruiting calyx usually enlarged: trees or erect shrubs, mostly stipulate.

Fruiting calyx with 2 or more of its segments or sepals produced into long membranous, reticulate, nerved wings much longer than the fruit; pericarp leathery, (woody in some sp. of *Shorea*).

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Fruiting calyx with a distinct tube.

Calyx-tube quite free from the
fruit

1 *Dipterocarpus*.

Calyx-tube adherent to the fruit

2 *Anisoptera*.

Sepals united at the base only, the short
calyx-tube either quite free from the
fruit or slightly adherent to it, the
calyx-segments or sepals valvate or
nearly so.

Stamens with a single, long apical,
appendage from the connective

3 *Vatica*.

Stamens with 4 apical append-
ages from the anthers and 1
from the connective ...

4 *Pontacme*.

Sepals free, imbricate.

The three outer sepals always,
and one or both of the inner
two occasionally, winged in the
fruit; anthers with a short
apical appendage from the con-
nective

5 *Shorea*.

The two outer sepals winged in
the fruit, the three inner not
longer than the fruit and close-
ly embracing it, stamens with
a terminal appendage from the
connective longer than the
anther

6 *Hopea*.

Sepals of fruiting-calyx all enlarged but not
exceeding, or only slightly exceeding, the
fruit; pericarp leathery or woody.

Fruiting calyx embracing the fruit but
not adherent to it.

Sepals of fruiting calyx slightly
thickened.

Sepals of fruiting-calyx ob-
long, nearly equal, usually
shorter than the fruit, re-
flexed or erect ...

7 *Retinodendron*.

Sepals of fruiting-calyx
rotund, unequal (the inner
two smaller), reflexed ...

8 *Isoptera*.

Sepals of fruiting calyx much thickened and woody at the base.

Calyx forming a cup at the base of the fruit, but not adhering to it: pericarp woody

9 *Balanocarpus*.

Calyx adherent to the fruit: pericarp thickly leathery

10 *Pachynocarpus*.

Sect. II. ANCISTROCLADEE. Ovary 1-celled with a single ovule; stigmas 3, distinct: Seeds with copious ruminant albumen. Exstipulate climbers.

11 *Ancistrocladus*.

1. DIPTEROCARPUS, Gaertn. f.

Lofty trees, stellately pubescent or more or less clothed with fascicled hairs. Leaves coriaceous, entire or sinuate-crenate; lateral nerves connected by marginal loops and transverse reticulations; stipules large, valvate, enclosing the terminal bud, finally caducous and leaving an annular scar. Flowers large, white or reddish. Calyx-tube free. Petals usually pubescent externally, especially on the outer margin. Stamens ∞ ; anthers linear, equivalved, acuminate. Ovary 3-celled; style filiform; ovules 2 in each cell. Fruit nut-like, 1-seeded, enclosed in the accrescent calyx-tube, free; accrescent calyx-lobes 2, erect. Seed adnate to the base of the pericarp; cotyledons large, thick, unequal; radicle inconspicuous.—DISTRIB. Tropical E. Asia; species about 60.

Ripe fruit spheroidal or ellipsoidal, neither angled nor winged.

Young branches, petioles, under surfaces of the midribs, and nerves of the leaves covered with coarse stiff fasciculate hairs.

Fruit glabrous 1. *D. crinitus*.

„ stellate-pubescent 2. *D. Scortechini*.

Young branches deciduously pubescent.

Leaves with 12 or more pairs of nerves.

Leaves oblong-elliptic, their under surfaces sparsely stellate-pubescent 3. *D. Skinneri*.

Leaves elliptic or ovate-elliptic, their under surfaces puberulous or quite glabrous 4. *D. turbinatus*.

Leaves with 8 to 10 pairs of nerves.

All parts quite glabrous 5. *D. Kerrii*.

Ripe fruit with 5 angular tuberosities on its upper portion ... 6. *D. cornutus*.

Ripe fruit 5-angled :

Calyx-tube glabrous ; leaves 2.5 to 3.25 in. long ... 7. *D. fagineus*.

Calyx-tube densely stellate-tomentose ; leaves 6 to 8 in. long ... 8. *D. oblongifolius*.

Ripe fruit with its 5 angles produced into wings :

Leaves glabrous :

Young branches at first scurfy-puberulous, ultimately quite glabrous ; buds ovoid, minutely pale canescent ... 9. *D. grandiflorus*.

Young branches as in the last, but with conspicuous tawny-tomentose, oblique annuli ; buds cylindric, hoary-canescant ... 10. *D. Kunstleri*.

Young branches minutely tawny-pubescent, not annulated and never glabrous ; buds ovoid, densely sericeous 11. *D. Griffithii*.

Leaves minutely stellate-pubescent on the lower surface :

Flowers about 1 in. long ; leaves with rounded or sub-cordate bases ; young branches very stout, with ovoid buds : the accrescent lobes of the calyx 1.5 in. broad ... 12. *D. incanus*.

Flowers 1.5 in. long ; leaves with rounded or cuneate, not sub-cordate, bases : young branches moderately stout with cylindric buds : accrescent calyx-lobes .7 to .8 in. broad ... 13. *D. alatus*.

1. DIPTEROCARPUS CRINITUS, Dyer in Hook. fil. Fl. Br. Ind. I. 296.

A tree 90 to 150 feet high : young branches, petioles, under surface of midrib and nerves, pedicels and outer surface of bracts of inflorescence clothed with stiff yellowish-brown fascicled hairs. *Leaves* very coriaceous, ovate or more usually obovate, acute, the base rounded or sub-acute ; the edge entire, fringed with fascicled hairs, recurved (at least when dry) ; both surfaces sparsely hispid when young, glabrescent when old ; main nerves 12 to 18 pairs, spreading, rather straight, very prominent on the lower, depressed on the upper, surface ; length 3 to 5 in., breadth 1.75 to 2.75 in., petiole 1 to 1.25 in. *Racemes* about 6-flowered. *Flowers* nearly 2 in. long. *Calyx* glaucous, glabrous. *Pistils*

puberulous, linear, blunt. *Stamens* 15. *Fruit* (immature) ellipsoid, wingless, glaucous, smooth; the enlarged calyx-lobes linear-oblong, blunt, 3-nerved, inconspicuously reticulate, shining, 3·5 in. long and ·6 to ·8 in. broad. Dyer in Journ. Bot. 1874, p. 103. *D. hirtus*, Vesque, Comptes-Rendus, 1874, 78, p. 627; Journ. Bot. 1874, p. 151; Dyer l. c. 154.

Malacca; Maingay (Kew Distrib.) No. 196.

Perak; Scortechini, No. 1955. *DISTRIB.* Borneo: (fide Dyer), Beccari, 779, 1883.

Burck (Ann. Jard. Bot. Buitenzorg, Vol. 6, p. 196) reduces this to *D. Tamparan*, Korth. Korthals however describes the fruit of that species as having accrescent calyx-lobes 13 inches long by 3 broad.

2. *DIPTEROCARPUS SCORTECHINII*, King, n. sp. A large tree: young branches rather stout, densely clothed, (as are the short cylindric buds, the petioles and racemes) with large tufts of coarse, brownish, shining hairs. *Leaves* coriaceous, elliptic-ovate, or sometimes elliptic-sub-ovate, sub-entire, abruptly and shortly acuminate, slightly narrowed to the rounded base; upper surface glabrous or glabrescent, the nerves sparsely stellate-pubescent, the midrib tomentose; under surface sparsely stellate-pubescent, the nerves (and especially the midrib) with long silky hairs intermixed: main nerves 16 to 18 pairs, straight, oblique, very prominent beneath: length 6 to 7·5 in., breadth 3 to 3·5 in., petiole 1 to 1·2 in. *Racemes* few-flowered, short. *Fruit* (? immature) ovoid, contracted under the mouth, glaucous, stellate-pubescent, ·75 in. long and ·5 in. in diam; accrescent calyx-lobes linear-oblong, reticulate, slightly narrowed in the lower half, the apex obtuse, obscurely 3-nerved (the middle nerve bold, the two lateral faint), 4 to 5 in. long and ·8 to 1 in. broad.

Perak; Scortechini, No. 1813.

This is closely allied to *D. crinitus*, Dyer, to which Scortechini doubtfully referred it. It differs from *D. crinitus* in its larger leaves and stellate-pubescent fruit. It has also a different time of flowering; for, as Scortechini remarks in his field notes, this is in immature fruit in the beginning of March, while *D. crinitus* does not come into flower until the end of April.

3. *DIPTEROCARPUS SKINNERI*, King, n. sp. A tall tree; young branches thin, deciduously tawny-pubescent. *Buds* cylindric, narrow, golden-sericeous. *Leaves* oblong-elliptic, narrowed in the upper half or third to the acute or shortly acuminate apex, slightly narrowed to the rounded base, upper surface glabrous or sparsely adpressed-pubescent, the midrib tomentose, the lower sparsely stellate-pubescent, the midrib and 16 to 19 pairs of straight oblique nerves adpressed-sericeous; nerves prominent on the lower, faint on the upper, surface when dry:

length 5 to 8 in., breadth 2·25 to 3 in.; petiole ·7 to ·9 in., tomentose. *Racemes* simple, short, 2- or 3-flowered, pubescent. *Flowers* 2·5 in. long. *Calyx* with narrowly campanulate tube, covered outside with minute, pale, stellate tomentum. *Petals* linear-oblong, blunt, more or less pubescent outside. *Fruit* (? immature) globular-ovoid, glabrous, ·65 in. in diam.; accrescent calyx-lobes glabrous, reticulate, linear, blunt, contracted at the very base, nearly 5 in. long and about ·75 in. broad.

Penang; at the back of West Hill, at an elevation of 1,000 feet. Curtis No. 1103.

A very distinct species known only by Mr. Curtis' scanty specimens. I have named it in honour of Mr. Skinner, Resident Councillor of Penang.

4. *DIPHYOCARPES TERBINATUS*, Gaertn. f. *Fruct.* III. 51, t. 188. A tree 80 to 100 feet high; young shoots rather slender, at first minutely velvety, pale grey, afterwards glabrous; buds cylindric, softly pale pubescent. *Leaves* thinly coriaceous, elliptic or ovate-elliptic, acuto or shortly acuminate, the base rounded or sub-cordate, the edges slightly undulate, sometimes sub-crenate; both surfaces glabrous, or the lower puberulous especially on the midrib and nerve^s; main nerves 12 to 18 pairs, straight, oblique, prominent on the lower surface; length 4·5 to 11 in., breadth 2·5 to 5·25 in.; petiole 1 to 1·5 in., glabrous or pubescent; stipules tawny-velvety in the lower part but pubescent towards the apex. *Racemes* 3- to 5-flowered. *Flowers* 1·25 to 1·5 in. long. *Calyx*-tube obconic, glabrous, smooth, not winged. *Petals* linear-oblong, obtuse, more or less canescent. *Fruit* ellipsoid-ovoid, tapering to each end when young; globular when ripe and ·75 in. in diam., with neither wings nor ridges; the two accrescent calyx-lobes glabrous, conspicuously reticulate, obscurely 3-nerved, oblong-lanceolate, obtuse, 4 to 4·5 in. long and 1·25 in. broad; the three small lobes of the calyx deltoid, very short. Roxb. *Hort. Beng.* 42; *Fl. Ind.* II. 612; *Corom. Plants* III. 10 t. 213. Ham. in *Mem. Wern. Soc.* VI. 300; Wall *Cat.* 952; A. DC. *Prod.* XVI. 2. 607; W. and Arn. *Prod.* 85; Dyer in Hook. fil. *Fl. Br. Ind.* I. 295; *Journ. Bot.* 1874, p. 102 t. 143, fig. 13; Kurz. *For. Fl. Burm.* I. 114. *D. laevis*, Ham. l. c. 299.; A. DC. l. c. 607. W. and A. *Prod.* 85; Kurz, l. c. 114. ?*D. indicus*, Bedd. *Forest. Rep.* 1864-5, 17 cum tab.; *Flora Sylvat.* t. 94.

Assam, Cachar, Chittagong, Burmah, S. India.

VAR. *andamanica*: enlarged calyx-lobes linear-oblong, not oblanceolate, ·75 in. broad; leaves broadly ovate, sub-cuneate at the base.

South Andaman: common.

Following Dyer, I have included under this the plant named *D. laevis* by Buchanan Hamilton in the *Memoirs of the Wernerian Society*,

Vol. VI. p. 299. Hamilton distinguishes his species *D. laevis* by its flattened branchlets, and perfectly glabrous leaves and petioles, while *D. tuberculatus* Gaertn. has terete branches and pubescent leaves and petioles. The former (called *Dulia Garjan*, by the natives of Chittagong) yields, he says, no wood-oil; while the latter (called *Telia Garjan*) does. The materials before me do not enable me to differentiate the two as species. Moreover, specimens sent to me by Dr. E. Thurston, Reporter on Economic Products to the Government of India, (and which had been collected by the Forest Officer of Chittagong under the vernacular names *Dulia* and *Telia Garjan*) appear exactly alike. Careful investigation in the field may however prove that there is some better basis for Hamilton's view than the trifling differences which he has noted in the outline of the branchlets and the pubescence of the leaves. I am not at all satisfied that the Southern Indian tree named *D. indicus* by Beddome is rightly reduced here. Better Herbarium specimens than any which I have seen, and investigation in the field, are I think required to settle this point also.

5. *DIPHTEROCARPUS* KIEFF, King, n. sp. A tall tree; all parts, except the petals, glabrous; young branches thin, slightly flattened at the tips, not annular. *Buds* narrow, cylindric. *Leaves* coriaceous, ovate-elliptic, acute or very shortly and bluntly acuminate, the edges undulate, the base cuneate; main nerves 8 to 11 pairs, oblique, straight, bold and shining on the lower surface; length 3 to 4 in., breadth 2 to 2.5 in., petiole 9 to 1.1 in. *Panicles* short, spreading, few-flowered. *Flowers* 1.5 in. long. *Calyx-tube* glaucous. *Petals* linear-oblong, obtuse, more or less pubescent or tomentose towards their middle externally. *Fruit* turbinate, smooth, 1 to 1.5 in. in diam; accrescent calyx-lobes linear-oblong, blunt, reticulate, 3-nerved, 1.5 to 5 in. long, and 1.25 to 1.5 in. broad: minor lobes very short, broad, rounded.

Malacca; Maingay (Kew Distrib.) No. 199, Griffith 727, Derry 1032. Pangkore; on Gunung Yunggal, Curtis No. 1561.

Mr. Curtis describes this as a very large tree yielding an oil. It resembles *D. Hasseltii*, Bl., but has much smaller leaves.

I have named this species in honour of Dr. Kerr, an enthusiastic Botanist much interested in the Malayan Flora. Closely allied to this, and perhaps identical with it, is the tree represented by Mr. Curtis' specimen (Waterfall, Penang) No. 1653. The young wood of the latter is however paler than that of *D. Kerrii* from Pangkore and Malacca, and the leaves are puberulous, not glabrous, beneath. I have seen no flowers of it.

6. *DIPHTEROCARPUS* CORNUTUS, Dyer in Hook. fil. Fl. Br. Ind. I, 296. A tree 50 to 70 feet high: young branches stout, compressed, minutely

rufous-tomentose with a few scattered longer hairs. *Leaves* large, coriaceous, oblong, blunt at each end, the edges undulate or obscurely sinuate-crenate; upper surface glabrous, the midrib and nerves pale when dry: under surface densely covered with minute, pale, stellate tomentum: main nerves 16 to 20 pairs, prominent, spreading, straight, the transverse veins rather distinct: length 9 to 11 in., breadth 5 to 8 in., petiole 2 to 3 in.; stipules rufous-scriceous, the hairs fascicled. *Racemes* 7- or 8-flowered. *Flowers* 1·75 in long *Calyx-tube* 5-winged, canescent, the short lobes very obtuse. *Petals* oblong or sub spatulate, stellate-canescens. *Fruit* about 1 in long, sub-globular, with 5 thick short wings in its upper half, enlarged calyx-lobes linear, obtuse, 5 or 6 in. long and 1·25 to 1·75 in. broad, shining, boldly 3-nerved, reticulate. Dyer in Journ. Bot. 1874, p. 103, t. 143, fig. 15. *Paranarium dilleniifolium*, R. Br. Wall. Cat. No. 7520 *Petrocarpa dilleniifolia*, Stoud. Nomencl. II, 309.

Singapore: Wallich. Malacca: Maingay (Kew Distrib.) No. 197. Penang: Curtis No. 1102 Perak: Wray, No. 1160.

It was Sir Joseph Hooker who first pointed out that the Wallichian plant No. 7520, issued as *Paranarium*, belongs really to this species.

7. *DIPHTEROCARPUS FAGINEUS*, Vesque in Comptes-Rendus, tome 78, p. 626: Journ. Bot. for 1871, p. 149. A tree 10 to 80 feet high: young branches slender, at first minutely pulverulent tawny-pubescent, ultimately glabrescent or glabrous and dark-coloured, the buds cylindric. *Leaves* coriaceous, elliptic ovate to elliptic-lanceolate, acute, the edges entire or sub-undulate-crenulate, the base cuneate, both surfaces puberulous especially on the midrib and nerves: main nerves 10 to 13 pairs, straight, oblique, prominent on the sub-glaucous lower surface; length 2·5 to 3·25 in., breadth 1·3 to 1·75. *Racemes* slender, 1- to 4-flowered. *Flowers* about 1·25 in. long *Calyx-tube* campanulate, not constricted at the mouth, 5-angled. *Ripe fruit* ellipsoid, tapering more at the base than at the apex, 5-angled, glaucous, 1 in. long: accrescent calyx-lobes linear-oblong, obtuse, contracted at the base, 3-nerved, 2·5 to 3 in. long and about ·75 in. broad. *D. prismaticus*, Dyer Journ. Bot. 1874, pp. 104, 152. t. 144 fig. 17. *Dipterocarpus*, sp. Hook. fl. in Linn. Trans. XXIII, 161.

Perak: King's Collector No. 3527, Scortechini. Penang: Curtis No. 1401.

D. fagineus, Vesque, has been collected hitherto only in Borneo (Beccari No. 3008 and Motley No. 143,) and the leaves are described by Dyer as being papyraceous in texture and having about 8 pairs of lateral nerves. The leaves of the Perak tree which I now refer to this

species, are coriaceous and have 10 to 13 pairs of nerves. The Perak plant may therefore belong to a distinct, but closely allied, species. Curtis' Penang specimens (No. 1401) are quite glabrous in all parts except the petals.

8. *DIPTEROCARPUS OBLONGIFOLIUS*, Blume, Mus. Bot. Lugd. Bat. II, 36. A tall tree: young branches glabrous, dark-coloured, sparsely lenticellate; buds cylindric. *Leaves* coriaceous, oblong or obovate-oblong, shortly and bluntly acuminate, the edges sub-undulate, the base cuneate; both surfaces shining, glabrous, the midrib and 13 to 16 pairs of straight bold nerves with a few stellate hairs along their sides: length 6 to 8 in., breadth 2 to 2.75 in., petiole .9 to 1.1 in. *Racemes* slightly supra-axillary, densely tawny-tomentose, bifurcating, each branch with 3 to 5 flowers and several linear membranous deciduous bracts. *Flowers* about 2.5 in. long. *Calyx-tube* fusiform, slightly contracted at the mouth, 1 in. long, boldly 5-angled, densely stellate tawny-tomentose as are the 3 minor calyx lobes; the 2 larger linear-oblong lobes sparsely stellate-pubescent, boldly 1-nerved and with 2 obscure lateral nerves. *Ripe fruit* unknown. Miq., Fl. Ind. Bat. I, pt. 2, p. 498; A.DC. Prod. XXI, 2, 614; Dyer in Journ. Bot. 1874, 105. *D. stenopterus*, Vesque, Comptes-Rendus, tome 78, p. 625; Journ. Bot. 1874, p. 150.

Perak, Scortechini. *DISTRIB.* Borneo, Sumatra.

Except as regards inflorescence, the Perak specimens of this are practically glabrous. In Bornean specimens, however, the young parts, buds and petioles are fusco-tomentose. (Dyer l. c.)

9. *DIPTEROCARPUS GRANDIFLORIS*, Blanco, Fl. Philipp. Ed. 2, 314. A tree 80 to 120 feet high: young branches rather stout, sub-compressed, at first hoary-puberulous, but finally quite glabrous, nearly black when dry; leaf-buds shortly ovoid, minutely pale-carescent. *Leaves* coriaceous, ovate-elliptic, shortly acuminate; the base broad, rounded or sub-truncate, sub-cordate; the edges entire or obscurely undulate-crenate, both surfaces glabrous; main nerves 14 to 16 pairs, spreading, rather straight, prominent on the lower, obsolete on the upper, surface; length 6 to 9 in., breadth 3.5 to 5 in.; petiole 2 to 3 in. long, glabrous. *Racemes* about 4-flowered. *Flowers* articulated to the rachis, 2 in. long. *Calyx-tube* 5-winged from base to apex. *Petals* linear-oblong. *Fruit* oblong, 2.5 in. long, wings stout, .5 in. or more in width; the 2 accrescent lobes of the calyx oblong, obtuse, glabrous, reticulate, 3-nerved, the mesial nerve the longest and most distinct, 7 to 9 in. long and 1.5 to 2 in. broad, the smaller calyx lobes sub-orbicular. A.DC. Prod. XVI., 2 p. 612; Dyer in Journ. Bot. 1874, p. 106, t. 145, fig 19; Burck in Ann. du Jard. Bot. Suisseborg, vol 6, 201. *D. Blancoi*, Bl., Mus. Lugd. Bat. II.

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35. *D. Motleyanus*, Hook. fil. in Trans. Linn. Soc. XXIII. 159. A.DC. in DC. Prod. XVI., pt. 2, 611. *D. pterygocalyx*, Scheff. Obs. Phyt. II. 35; Dyer in Hook. fil. Fl. Br. Ind. I, 298. *Mocanera grandiflora*, Blanco, Fl. Philipp. Ed. I, 451. *Anisoptera?* Turcz. in Bull. Soc. Nat. Mosc. 1858, I, 233.

Malacca: Maingay (Kew Distrib.) No. 198. Penang: Curtis 424. Perak: Seortechini 152 b. DISTRIB. Bangka, Teysmann. (?) Philippines

The late Father Seortechini's field notes contain the following account of the flower: "The petals of this are red inside in the middle, but pale towards the margins, the stamens are numerous, 2-seriate, united in a ring by their enlarged bases, falling off together: staminodes many, short, adpressed to the ovary. Ovary pubescent, scaly towards the base. Fruiting-calyx reddish." The species comes near *D. Griffithii*, but is distinguished from it by the characters which I have noted under that species. Flowers of *D. Griffithii* are, however, wanting for comparison.

10. *DIPIEROCARPUS KENSLEI*, King, n. sp. A tree 80 to 120 feet high: young branches flattened, at first sparsely covered with minute scurfy deciduous pubescence, ultimately glabrous, but always with oblique tawny-tomentose annuli. Buds narrowly cylindric, hoary-canescens. Leaves elliptic or sub-rotund elliptic, very shortly acuminate, the base rounded or sub-cuneate, the edges undulate or sub-crenate, both surfaces glabrous: main nerves 16 to 18 pairs, oblique, straight, prominent on the lower surface length 7.5 to 11 in., breadth 4.5 to 7 in., petiole 1.5 to 2 in. Racemes 6 to 8 in. long, often bifid, 4- to 6-flowered, glabrous. Flowers 2.5 to 3 in. long, glaucous. Calyx-tube narrowly obovate, 5-winged, glaucous. Petals linear, obtuse, glaucous. Fruit sub-globular, an inch or more long, with 5 wings about 25 in. wide: accrescent calyx-lobes oblong, obtuse, slightly narrowed towards the base, glabrous, reticulate, 3-nerved, 6 or 7 in. long and about 1.25 in. broad.

Perak: King's Collector, Nos. 3639, 3798, 7508 and 7606.

Allied to *D. grandiflorus*; but with larger leaves, smaller fruit and different buds. Allied also to *D. Griffithii* but with smaller fruit and different buds. This species has leaves like *D. ternervis* Bl. and *D. retusus* Bl., but differs from these in having winged fruit: it also resembles *D. Dyeri*, Pierre, which, however, has longer leaves with hairy petioles and more narrowly winged fruit.

11. *DIPIEROCARPUS GRIFFITHII*, Miq. Ann. Mus. Lugd. Bat. I, 213. A tree 100 to 125 feet high: young branches stout, sub-compressed, minutely tawny-canescens; the leaf buds ovoid, densely covered with

yellowish-brown shining hair. *Leaves* coriaceous, broadly ovate, usually slightly narrowed to the rounded base, but sometimes the base truncate-sub-cordate, the apex acute or shortly acuminate, both surfaces glabrous, the upper shining; main nerves 12 to 14 pairs, spreading, straight, slightly prominent on the lower surface: length 5 to 11 in., breadth 3 to 5.5 in., petiole 2.25 to 3.5 in. *Racemes* 3- or 4-flowered. *Flowers* 1.5 in. long. *Calyx* ob-conic, sub-glabrous, 5-winged. *Fruit* oblong, 2.5 in. long, the wings extending from base to apex, stout, .5 in. or more broad: accrescent lobes of calyx oblong, obtuse, glabrous, reticulate, boldly 3-nerved, 5 to 7 in. long and about 1.75 in. broad. A. DC. in DC. Prod. XVI, Pt. 2, 611; Dyer in Hook. fil. Fl. Br. Ind. I, 299; Journ. Bot. 1874, 107. Kurz For. Flora Burma. I, 116. *D. grandiflorus* Griff. Notul. IV, 515 (not of Blanco).

S. Andaman: Kurz, King's Collector.

This closely resembles *D. grandiflorus*, Blanco, but the two may be readily distinguished by their young branches and leaf-buds. The young branches of this species are pale canescent and its leaf-buds broad and golden sericeous, while the branchlets of *D. grandiflorus* are quite glabrous and dark-coloured and the buds are narrow and pale canescent.

12. *DIPYROCARPUS INCANUS*, Roxb. Hort. Beng. 42; Fl. Ind. II. 614. A tall tree young shoots terete, stout, densely but minutely tawny-tomentose; the buds short, ovoid, thick, with longer tomentum than the branchlets. *Leaves* coriaceous, broadly ovate, acute or sub-acute, the base rounded or sub-cordate, the edges undulate; upper surface glabrous, the midrib alone slightly pubescent: under surface uniformly pale, shortly but softly stellate-pubescent, the midrib and nerves tomentose. main nerves 12 to 15 pairs, oblique, straight, prominent on the lower surface; length 5 to 8 in., breadth 2.5 to 4.75 in.; petiole .8 to 1.25 in., pubescent. *Flowers* about 1 in. long, usually in racemes but occasionally in short 7- or 8-flowered panicles. *Calyx-tube* ob-conic, 5-winged, minutely tomentose. *Petals* oblong, obtuse. *Fruit* sub-globose, about 1 in. in diam., 5-winged from base to apex; the wings thin, from .25 to .5 in. broad; the 2 accrescent lobes of the calyx narrowly oblong, obtuse, glabrous, much reticulate, 3-nerved in the lower half, when mature 5.5 in. long and nearly 1.5 in. broad; the 3 minor lobes sub-orbicular. Wight & Arn. Prod. 84; A. DC. Prod. XVI. 2, 611; Dyer in Hook. fil. Fl. Br. Ind. I, 298; Journ. Bot. 1874, p. 106.

S. Andaman: common. *DISTRIB.* Burmah, Kurz, Herb. No. 2109 (in part).

The plant here described under the name *D. incanus* closely re-

sembles *D. alatus*, Roxb.; but its flowers are shorter, the leaves are more broadly ovate, and ~~have~~ rounded or cordate, not cuneate, bases, while the pubescence of the lower surface is paler and more uniform and the young branchlets and leaf-buds are stouter. Moreover the accrescent lobes of the calyx are longer and nearly twice as broad: the 5 wings of the calyx-tube are also broader. Roxburgh's description of his species *D. inanus* is very brief; he left no drawing of it at Calcutta; and no authentic specimens of his own naming appear to exist. It is therefore impossible to decide with absolute certainty what Roxburgh's *D. inanus* is. At Kew Mr. Dyer accepts Kurz's Pegu specimen No. 2109 as belonging to it, and the specimens recently brought from the S. Andaman by my collectors agree with that number of Kurz's.

13. *DIPLOCARPUS ALATUS*, Roxb. Hort. Beng. 42; Fl. Ind. II 614. A tree 80 to 125 feet high: young branches terete, rather stout, softly and minutely pubescent; the buds narrow, rufous-sericeous. Leaves coriaceous, ovate-elliptic, the apex acute, the base cuneate, the edges undulate: upper surface glabrous except the minutely tomentose nerves and midrib; lower sparsely and minutely stellate-pubescent, the 10 to 14 pairs of oblique rather straight prominent main nerves densely tomentose; length 5 to 8 in., breadth 2·75 to 4·5 in., petiole 1 to 1·5 in., pubescent: stipules sericeous pubescent. Panicles 6- or 7-flowered. Flowers about 1·5 in. long. Calyx-tube ob-conic, 5-winged, stellate-pubescent, as are the linear-oblong petals. Fruit globose, 1 in. in diam., puberulous, 5-winged from base to apex; the wings glabrous, thin and about 5 in. broad; the 2 accrescent lobes of the calyx linear-oblong, obtuse, glabrous, much reticulate, 3-nerved in the lower half, 4·5 in. long and 7 or 8 in. broad the 3 unenlarged lobes obtuse. Wall. Cat. 953; A. DC. Prodr. XVI. 2, 611 in part: Dyer in Hook. fil. Fl. Br. Ind. I, 298; Journ. Bot. 1874, p. 106 (excl. syn. *D. costatus*, Gaertn.) Kurz For. Flora Burm. I. 116; Pierre Flore Forest. Coch-Chine, t. 212. *Oleorylon balsamiferum* Wall. Cat. p. 157.

Burmah: Wallich, Brandis, Helfer No. 730, Kurz. Andamans?

Gaertner's figure and description of his *D. costatus* are confined to the fruit only. The former is that of a *Dipterocarpus* with the elongated calyx-lobes of *D. alatus*, Roxb., but with the 5 wings on the tube of the calyx very narrow, whereas those of Roxburgh's *D. alatus* are very broad. Dyer (F. B. I. i, 298) expresses his belief that Gaertner's figure is a bad representation of *D. alatus*, Roxb., and he reduces Gaertner's *D. costatus* to Roxburgh's *D. alatus*. M. De Candolle, on the other hand, retains *D. costatus*, Gaertn. as a good species and, ~~for~~ ⁱⁿ he is followed by Kurz; but Messrs. Dyer and De Candolle agree

that the *D costatus* described by Roxburgh is a different plant from Gaertner's. For Mr. Dyer it is still a doubtful species; while M. De Candolle reduces it to *D angustifolius* W & A, which for Dyer is in its turn a doubtful species. A careful examination of the material now collected at Calcutta and at Kew leads me to believe that *D costatus*, Gaertn., is a perfectly good species and that the best character to distinguish it from Roxburgh's *D alatus* is the narrowness of the wings of the calyx tube. Specimens collected in Burmah by Kurz (No 113 of his Herbm) and by Brandis, have fruits exactly like that figured by Gaertner. Moreover I see no reason for thinking that the tree described by Roxburgh (Fl. Ind 11 614) as *D costatus*, Gaertn. is anything else than Gaertner's plant. Mr. Dyer (Journ. Bot. 1874, p. 155) expresses the opinion that *D. Lescher*, Vesque—a species collected on the island of Pulo Condor off the Cambodian coast—is reducible to *D. alatus*, Roxb.

It is very doubtful whether *D. alatus* Roxb. occurs in the Andamans. I have seen no specimens of it from these islands, and I give it as an Andaman plant on the authority of the "Flora of British India."

Besides the preceding, there are various other species of *Dipterocarpus* in the Calcutta Herbarium from localities within the British Malayan region which, for want of sufficient materials, I am unable to describe. Chief amongst these are —

- (1) Curtis No. 1560 from Penang, a species with winged calyx tube
- (2) A species from Perak, represented in Scortechini's collection (without number) by fruits resembling those of *D. Lowii* H. & A., *D. intricatus*, Dyer, and *D. lamellatus*, Hook. fil.
- (3) A species from the Andamans with leaves resembling those of *D. Griffithii*, Miq., but with globular fruit which has neither angles nor wings on the calyx-tube. This possibly may be a form of *D. pilosus*, Roxb.
- (4) A Perak species (Herb. Scortechini mixed with No. 1478) represented by fruits something like those of *D. faginus*, Vesque, but with the calyx-tube winged, not angled.
- (5) A Perak species represented by leaf-twigs and loose fruit of a species resembling both *D. faginus*, Vesque, and *D. gracilis*, Bl., but differing from both.
- (6) A species from Perak (Wray No. 4031) having leaves like *D. Griffithii*, Miq., but with shorter petioles, and having also fruit rather like *D. Griffithii*, but the calyx-tube with narrower wings, and the minor calyx-lobes smaller.

2. ANISOPTERA, Korth.

Resinous trees. *Leaves* coriaceous, entire, feather-veined and finely reticulate; stipules small, fugacious or inconspicuous. *Flowers* in lax terminal panicles. *Calyx-tube* very short, adnate to the base of the ovary; the segments imbricate, then subvalvate. *Stamens* α ; anthers ovoid with a long subulate connective, outer valves larger. *Ovary* 3- (rarely 4- 5-) celled; style fleshy, ovoid or oblong, with an attenuate 3- 5-fid apex; ovules 2 in each cell. *Fruit* adnate to the calyx-tube, indehiscent, 1-seeded, crowned by the accrescent calyx-segments, of which 2 form linear-oblong lobes. *Cotyledons* fleshy, unequal; radicle superior. —DISTRIB. Malay Peninsula and Archipelago to New Guinea. Species about 6.

1. ANISOPTERA CURTISII, Dyer MSS. A tree 80 to 120 feet high: young branches slender, minutely scurfy-tomentose. *Leaves* oblong, tapering to both ends, the apex sub-acute or acute, the base narrowed but rounded; the upper surface glabrous, shining, the lower densely ochraceous-lepidote and sparsely stellate-pubescent; main nerves 18 to 20 pairs, spreading: length 2 to 3.5 in., breadth .75 to 1.25 in., petiole .5 to .75 in. Accrescent calyx-lobes 3.5 to 4.5 in. long, linear-spathulate, shining, 3-nerved: the transverse veins bold and numerous.

Penang: Curtis. Perak King's Collectors.

Var. latifolia: leaves broadly elliptic, blunt, the bases rounded but narrowed.

Penang: Curtis, No. 1400.

The vernacular name of this in Penang is *Ringkong*.

3. Vatica, Linn.

Large or moderately sized resinous trees. *Leaves* coriaceous, entire, feather-veined and finely reticulate; stipules small, fugacious or inconspicuous. *Flowers* in axillary and terminal panicles, usually tomentose before expansion. *Calyx-tube* short, free, or adnate to the base of the ovary; segments somewhat acute, imbricate, then sub-valvate. *Stamens* 15; anthers oblong, external valves larger, connective apiculate. *Ovary* 3-celled; style short, subulate, or apex clavate or capitate; stigma entire or 3-toothed; ovules 2 in each cell. *Fruit* leathery, indehiscent, 1-seeded, surrounded by and sometimes partly adnate to the accrescent, membranous, nerved and reticulate calyx-lobes, two of which expand into narrow wings 2 or 3 in. long, the other three being much smaller. *Cotyledons* fleshy.

DISTRIB. Tropical Asia and chiefly Malaya; species about 10.

Synaptea is a genus established by Griffith (*Notulae* IV., 516, Tab. 585 A, fig V.) for a tree collected at Mergui, and named by him *Synaptea*.

tea odorata. This plant has been named *Synaptea grandiflora* by Kurz, (Journ. A.S., Beng., 1870, 2, 65), and *Anisoptera odorata* Kurz, (For. Flor. Burm. I, 112), while Dyer has identified it with *Hopea grandiflora*, Wall, Cat. 958, and reduced it to *Vatica grandiflora* (F.B.L., i., 301).

The characters of the genus *Synaptea*, as given by its author, are practically those of *Vatica*, Linnæus (Mantissa II., p. 152-3, No. 1811), except that, whereas in the Linnæan description nothing is said about the fruit or its relation to the calyx, Griffith distinctly explains that he has given the name *Synaptea* because the ovary is adnate to the calyx. He does not say to what extent adnate, but, in fruiting specimens of his *Synaptea odorata*, the adhesion extends to the lower part only. In the "Mantissa" of Linnæus, only one species of *Vatica* is described, viz., *V. chinensis*; and of the specimen thus named in the Linnæan Herbarium, Sir J. G. Smith publishes a figure (Smith Ic., ined., t. 36.). This figure however does not show clearly whether the base of the ovary is, or is not, adherent to the calyx, and the fruit is not figured at all. A reference to Linnæus' specimen ought to settle what *V. chinensis* really is; but unfortunately it has not settled it. I have not myself examined the actual Linnæan specimen; but the opinions of botanists who have examined it vary as to its identity. The plant is generally admitted not to be of Chinese origin, for no Dipterocarp is known to inhabit China. Wight and Arnot are of opinion (Prod. 84) that *Vatica chinensis* is the same as *Vatica laccifera*, W. A. (*Shorea Talura*, Roxb.—*sic* Dyer). Alph. De Candolle (Prod. XVI., 2, p. 619) keeps up the species *V. chinensis*, while Dyer (Fl. Br. Ind., I, 302) reduces it to *Vatica Roxburghiana*, Blume (Mus. Bot. Lugd. Bat. II, 31. t. 7.), Blume's *Vatica Roxburghiana*, being, as the citations and figure given by that author show, the *Vateria Roxburghiana* of Wight's Illustrations, p. 87, and Icones t. 26. It cannot be demonstrated, therefore, either from Linnæus' description or specimen, or from Smith's figure of the latter, whether Linnæus intended his genus *Vatica* to include only plants with the ovary and fruit free from the calyx, or whether plants in which there is such partial adhesion might not also be admitted. If the latter were the case there would be no occasion to keep up the genus *Synaptea*. This is the view adopted by Messrs. Hooker and Bentham, who remark of *Synaptea*, "*ex descriptione auctoris verisimiliter ad Vaticam referenda est.*" This view is also adopted by Dyer, in "Hooker's Flora of British India," where he reduces *Synaptea odorata*, Griff., to the genus *Vatica*, Section *Eu-Vatica*. This view is also to a certain extent adopted by Burck who (Ann. Gard. Bot. Buitenzorg) makes *Synaptea* a section of *Vatica*, characterised by having the lobes of the fruiting

calyx unequally accrescent, two of them being much elongate, and the fruit being partly inferior; while the section *Eu-Vatica*, as proposed by Benthams and Hooker originally, and adopted by Burck, is characterised by having the same fruiting calyx as *Synaptea*; nothing being said about the adhesion between the calyx and the fruit. Pierre, on the other hand, keeps up *Synaptea* as a genus on account of the presence of albumen and the structure of the embryo (characters not easily worked in herbarium specimens of this family). In my own opinion it appears advisable to admit *Synaptea* as a section of *Vatica*, but to exclude *Isauris*, *Retinodendron*, and *Pachynocarpus*, retaining these as distinct genera. *Vatica* would, according to this scheme, be divided into two sections:—

I. *Eu-Vatica*:—Fruit free from the accrescent calyx, i.e., fruit superior.

II. *Synaptea*.—Fruit adnate in its lower part to the accrescent calyx, i.e., fruit half inferior.

Sect. I. *Eu-Vatica*.—Fruit quite free from the calyx.

Inflorescence and ripe fruit pale tomentose;

flowers 4 in long 1. *V. perakensis*.

Inflorescence and ripe fruit rusty-tomentose.

Flowers 25 in. long; nerves of leaves 13

to 15 pairs; petioles 3 to 4 in long . . . 2. *V. Lowii*.

Flowers 45 in. long; nerves of leaves 9

to 12 pairs; petioles 6 to 1.5 in long... 3. *V. Maingayi*.

Sect. II. *SYNAPTEA*.—Calyx-wings adherent to the ripe fruit for nearly half its length

Leaves 9 to 10 in. long and with 18 to 20 pairs of nerves 4. *V. nitida*.

Leaves 2.5 to 7 in. long, with 6 to 13 pairs of nerves.

Larger lobes of calyx of fruit obovate and very blunt.

Leaves with 6 to 8 pairs of faint nerves 5. *V. cinerea*.

Leaves with 11 to 13 pairs of bold nerves 6. *V. Curtisii*.

Larger lobes of calyx narrowly oblong.

Leaves oblong or elliptic-oblong, with 9 to 11 pairs of nerves; petals narrowly oblong . . . 7. *V. faginea*.

Leaves broadly elliptic, with 11 to 13 pairs of nerves; petals broadly elliptic 8. *V. Dyeri*.

Leaves 2·5 to 3·5 in. long, with about 7 or 8

pairs of faint, main nerves, minutely reticulate. 9. *V. reticulata*.

1. *VATICA PERAKENSIS*, King, n. sp. A tree 60 to 80 feet high; young branches slender, deciduously scurfily stellate-pubescent, the bark rather pale. *Leaves* thinly coriaceous, oblong-lanceolate, rarely oblanceolate, more or less bluntly acuminate, sometimes caudate, the base cuneate; both surfaces glabrous, the midrib on the upper puberulous; main nerves 10 to 12 pairs, rather prominent beneath; length 2·5 to 4 in., breadth ·8 to 1·3 in., petiole ·4 to ·5 in. *Panicles* axillary and extra-axillary, crowded near the ends of the branches, 1 to 2 in. long, minutely pale tomentose, as are the ovate-lanceolate calyx-lobes. *Flowers* ·4 in. long. *Petals* narrowly oblong, obtuse, glabrous. *Stamens* slightly apiculate. *Ovary* minutely tomentose; stigma conical. *Ripe fruit* ·3 in. in diam., globose, the style persistent, minutely tomentose, quite free from the calyx; the two accrescent calyx-lobes oblong-ob-lanceolate, obtuse, obscurely 5-nerved, 2·5 in. long and 5 in. broad; minor lobes unequal, lanceolate-acuminate, the largest about 85 in. long.

Perak: King's Collector, Wray; a common tree. Pangkore: Curtis.

The nearest ally of this is *Vatica Bantamensis*, Benth. and Hook.; but that has rather larger and more coriaceous leaves, which are perfectly glabrous; larger flowers with petals scaly externally and a more scurfy inflorescence; moreover the whole of the accrescent calyx-lobes of its fruit are more coriaceous and the minor lobes are blunter.

2. *VATICA LOWII*, King, n. sp. A tree 60 to 80 feet high: young branches, petioles, inflorescence and calyx densely rusty, scurfy-tomentose with stellate hair intermixed, the branches ultimately glabrous and with dark bark. *Leaves* coriaceous, oblong, sub-acute, the base rounded; both surfaces glabrous, the midrib puberulous on the upper; main nerves 13 to 15 pairs, spreading, slightly prominent beneath; length 2·5 to 3·5 in., breadth 1 to 1·5 in., petiole ·3 to ·4 in. *Panicles* axillary and terminal, much crowded towards the ends of the branches; ·75 to 1·5 in. long. *Flowers* 25 in. long. *Calyx-lobes* lanceolate, acuminate, oblique. *Petals* narrowly oblong, obtuse, almost glabrous. *Stamens* short, unequal-sided, apiculate. *Ovary* depressed, tomentose, style capitate. *Ripe fruit* globular, 25 in. in diam., deciduously rufous-scurfy; the style persistent, quite free from the calyx. Two large calyx-wings narrowly oblong, sub-acute, scarcely narrowed at the base, 5-nerved, 2·75 to 3 in. long, and ·6 in. broad; the three smaller lobes sub-equal, about ·5 or ·6 in. long, lanceolate, obtuse.

Perak: Soorteohini, No. 2108; King's Collector, No. 7496.

This species is closely allied to *V. Maingayi*, Dyer; but has smaller flowers, and rather larger leaves with considerably longer petioles.

3 *Vatica Maingayi*, Dyer, in Hook. fil, Fl, Br, Ind. I, 302. A tall tree: young branches slender, ultimately glabrous, but at first rusty furfuraceous-tomentose, as are the inflorescence, calyx and ripe fruit. *Leaves* coriaceous, oblong or obovate-oblong, shortly acuminate, the base rounded, glabrous on both surfaces; main nerves 9 to 12 pairs, slender, curving, spreading; length 3 to 4·5 in., breadth 1 to 1·75 in., petiole ·6 to 1·5 in. *Panicles* short, few-flowered. *Flowers* ·45 in. long. *Calyx-segments* oblong-lanceolate. *Ovary* depressed, rufous-tomentose. *Ripe fruit* globose, ·25 in. in diam., the style persistent, rufous-tomentose; free from the calyx; the two large wings linear-oblong, sub-acute, not contracted at the base, 5-nerved (the lateral nerves faint) 2 in. long and 35 to 5 in. broad; the 3 smaller lobes ovate, sub-acuminate, ·75 in. long, all glabrous.

Malacca · Maingay (Kew Distrib) No 209

Of this I have seen only Maingay's specimens, which are not good.

4. *Vatica niens*, King, n. sp. A tree 40 to 50 feet high: young branches and petioles densely covered with coarse deciduous scaly stellate tomentum, ultimately cinereous. *Leaves* coriaceous, narrowly oblong, acuminate, slightly narrowed to the rounded base; both surfaces, but especially the upper, shining, glabrous, the base on the lower sparsely scaly-tomentose when young, finely reticulate; main nerves 18 to 20 pairs, spreading, prominent on the lower surface: length 9 to 10 in., breadth 2 in.; petiole 5 in., stout. *Ripe fruit* globular, crowned by the persistent style, reticulate, ·5 in. in diam., adnate for half its length to the calyx; the two large wings of the calyx oblong, slightly ob-lanceolate, obtuse, 3 in. long and ·8 to ·9 in. broad, the 3 shorter wings ovate-acuminate, ·8 in. long; all boldly 5-nerved and shining.

Penang: Curtis, No. 1104

This fine species is known only by Mr. Curtis' imperfect specimens. It is very distinct, being at once recognisable amongst the Indian species of *Vatica* by the size of its leaves and calyx-wings.

5. *Vatica cinerea*, King, n. sp. A tree about 40 feet high: young branches rufescent-puberulous at the very tips, otherwise glabrous and cinereous. *Leaves* thinly coriaceous, ovate-oblong to ovate-lanceolate, sub-acute, the base rounded or sub-cuneate; both surfaces glabrous, finely reticulate when dry; main nerves 6 to 8 pairs, spreading, faint; length 2·25 to 3·5 in., breadth ·75 to 1·5 in., petiole ·3 to ·5 in. *Panicles* mostly axillary, spreading, rusty scurfy-tomentose, 1·25 to 2 in. long. *Flowers* ·45 in. long. *Calyx-lobes* sub-equal, lanceolate, sub-acute, tomentose on both surfaces. *Petals* oblong-lanceolate, sub-acute, the half of the outer surface which is outside in aestivation pubescent, other

wise glabrous. *Stamens* obtusely apiculate. *Ovary* depressed, minutely tomentose; stigma capitate. *Fruit* (not quite ripe) globular, umbonate, attached for half its length to the calyx. The two larger calyx-wings ob-lanceolate-oblong, obtuse or sub-acute, 5-nerved, flocculent-puberulous near the base when young, ultimately glabrous, 2 in. long and .5 in. wide; the 3 smaller wings lanceolate, obtuse, .5 in. long.

Langani: Curtis, Nos. 2797 and 2798. Kedah: Curtis, Nos. 2096 and 2514.

When dried, the leaves of this are of a dull gray colour—hence the specific name. Its fruit resembles that of the next species, but the leaves have fewer and less prominent nerves.

6. *Vatica curtisii*, King, n. sp. A tree about 40 feet high: young branches, petioles, inflorescence and calyx brownish scurfy-pubescent, ultimately glabrous. *Leaves* ovate-oblong, sub-acute, the base rounded, both surfaces quite glabrous, reticulate; main nerves 11 to 13 pairs, oblique, rather prominent beneath; length 3 to 5 in., breadth 1.3 to 2.5 in., petiole .3 to .45 in. *Racemes* axillary, few-flowered, 1 to 1.25 in. long. *Flowers* .35 in. long. *Calyx-lobes* unequal, the 2 longer narrowly oblong, obtuse; the 3 shorter lanceolate-acuminate. *Petals* elliptic, slightly oblique, blunt, glabrous except the pubescent edge which is external in the bud. *Ripe fruit* globular, .3 in. in diam., adherent to the calyx for half its length, the larger calyx-lobes oblong-obovate, usually obtuse, rarely sub-acute, 5-nerved, 1.75 to 2 in. long, and .7 in. broad; the smaller wings about .4 in. long.

Penang: Curtis, No. 1579.

7. *Vatica faginea*, Dyer in Hook. fil. Fl. Br. Ind., I., 301. A tree 80 to 100 feet high: young branches slender, minutely cinereous stellate-tomentose as is the inflorescence. *Leaves* coriaceous, oblong or elliptic-oblong, finely reticulate, glabrous; main nerves 9 to 11 pairs, spreading, curving, thin but prominent when dry; length 4 to 5 in., breadth 1.5 to 2 in. *Panicles* 2.5 in. long; flowers 5 in. long. *Calyx-tube* ribbed, minutely scurfy tomentose, the lobes unequal. *Petals* narrowly oblong, blunt, glabrous except the pubescent outside edge. *Ovary* hemispheric, minutely tomentose; stigma capitate, lobed. *Ripe fruit* globular, adherent for half its length to the calyx, about .25 in. in diam., the style persistent; the 2 larger calyx-wings narrowly oblong, or oblong-ob-lanceolate, obtuse, obscurely 5-nerved, 2 to 2.5 in. long, and .5 to .7 in. broad near the apex; the three smaller wings unequal, sub-spathulate, less than .5 in. long. *Hopea faginea*, Wall. Cat. 963. *Stereos pinangiana*, Wall., Cat. p. 157. *Synaptea faginea*, Pierre, For. Flore Coch.-China, t. 242.

Penang: Wallich. Perak: King's Collector, Nos. 3686 and 3765.

* 8 *Vatica Dyeri*, King, n. sp. A tree 80 to 130 feet high: young branches, panicles, and calyx on both surfaces densely rufous-flocculent-tomentose, with stellate hairs intermixed, the branches ultimately glabrous and their bark pale. *Leaves* membranous, usually broadly elliptic, rarely elliptic-oblong, sub-acute or very shortly and bluntly acuminate, the base rounded, both surfaces quite glabrous, finely reticulate main nerves 11 to 13 pairs, spreading, rather prominent beneath length 3.5 to 7 in., breadth 1.6 to 3 in., petiole .35 to .5 in., flocculent-tomentose. *Panicles* axillary or terminal, cymose, 1.5 to 3 in. long. *Flowers* 4 in. long. *Calyx lobes* unequal, the two larger oblong and obtuse, the three smaller lanceolate, acuminate. *Petals* broadly elliptic, very obtuse, slightly narrowed to the truncate base, much larger than the calyx-lobes glabrous, except one of the outside edges which is adpressed-pubescent. *Stamens* short, unequal-sided, bluntly apiculate. *Ovary* depressed-pubescent, the stigma capitate. *Ripe fruit* conical, the two large accrescent calyx-wings narrowly oblanceolate-oblong, blunt 5-nerved, 1.25 in. long and .25 in. broad, the three smaller wings one-fourth of the size of the larger, lanceolate, obscurely 5-nerved. *Synaptea Dyeri*, Pierre Fl. Forest Coch.-Chin., t. 241.

Perak King's Collector, No. 7662. DISTRIB., Cambodia, Lower Coch.-China, Pierre.

The Perak specimens are not in fruit but in flowers and leaves they agree with Pierre's specimens from Cambodia and Coch.-China.

9. *Vatica trifoliata*, King, n. sp. A tree 60 to 80 feet high all parts except the inflorescence glabrous, young branches slender, dark-coloured. *Leaves* coriaceous, oblong to ovate-lanceolate, tapering from the middle to each end, the apex bluntly acuminate, the base very cuneate and slightly unequal-sided, the edges sub-undulate; both surfaces finely reticulate when dry, the lower paler, main nerves 8 or 9 pairs, little more prominent than the secondary, length 2.5 to 3.5 in., breadth 1 to 1.25 in., petiole .4 in. *Panicles* axillary or terminal, puberulous, 2.5 to 3.5 in. long, lax, few-flowered. *Flowers* on long pedicels. *Calyx lobes* unequal, lanceolate, more or less obtuse, densely pubescent on both surfaces. *Ovary* hemispherical, ridged, densely tomentose, style short, glabrous; stigma minute. *Young fruit* sub-globular; fruiting calyx with 2 accrescent linear-oblong wings, the other smaller; all attached to the lower part of the fruit.

Perak King's Collector, No. 6969.

The only specimens which I have seen of this are without corolla, stamens, or ripe fruit. The species is, however, a very distinct one, and it is an unmistakable *Vatica*. I have therefore ventured to name it in spite of the imperfection of the material.

4. PENTACME, A. DC.

Glabrous or puberulous resinous trees. *Leaves* broad, entire, penninerved, with obtuse or cordate bases. *Flowers* large, paniced. *Calyx-tube* short, the lobes imbricate, 2 being quite external. *Stamens* 15, the filaments short, dilated; anthers much larger than the filaments, elongate, linear; the valves 4, sub-equal, each subulate at its apex, the connective also prolonged into a stiff deflexed arm as long as the appendages of the anther-valves. *Ovary* free, the style filiform, the stigma slightly lobed. *Fruit* enclosed within the imbricate calyx-lobes, of which two or more have elongated membranous reticulate many-nerved wings. Species 3—Burmese, Siamese, and Malayan.

1 PENTACME MALAYANA, King, n sp. A tree 40 to 50 feet high: young branches rather stout, dark-coloured, glabrous. *Leaves* subcoriaceous, rotund-ovate to broadly elliptic, the apex shortly and bluntly acuminate, the base rounded or slightly emarginate, both surfaces glabrous, pale when dry. main nerves 15 to 18 pairs spreading, prominent on both surfaces, length 5 to 7 in., breadth 2.75 to 4.5 in., petiole .75 to 1.1 in. *Panicles* axillary, lax, few-flowered, 2.5 to 5 in. long. *Flowers* .75 in. long and about as much in diameter when open, pedicelled. *Calyx-lobes* more or less broadly ovate, acuminate, minutely tomentose outside. *Petals* three times as long as the calyx, elliptic, spreading, puberulous on one-half outside, and glabrous on the other, quite glabrous inside. *Stamens* 15, equal erect, the filaments short and broad; the anthers elongate, narrow, with 5 apical awns, one of which is deflexed and rather shorter and thicker than the other four. *Ovary* ovoid, sub-glabrous, much shorter than the filiform style: stigma minute. *Ripe fruit* ovate, apiculate, 1 in. long, glabrous; calyx-wings all enlarged and reticulate except at the base, the three outer narrowly oblong, obtuse, and narrowed to the concave base, 9-nerved, 4 to 4.5 in. long, and .65 to .75 in. broad; the two inner lobes much narrower and fewer-nerved, about 2.5 in. long, or even shorter.

Langkani: Curtis, No 2095.

The petals of this species are spreading, and the flower has quite an unusual *facies* for the order. It is at once distinguished by its curiously 5-awned anthers. Four of these awns are the produced apices of the anther cells, the fifth (the thicker and deflected one) is a prolongation from the connective.

5. SHOREA, Roxb.

Glabrous, mealy, or pubescent resinous trees. *Leaves* entire or sub-repand, pinnate-veined; stipules large, coriaceous and persistent, or minute and fugacious. *Flowers* in axillary or terminal, lax, cymose

panicles; bracts persistent, caducous, or 0. *Sepals* ovate or lanceolate, imbricate, 3 being external and 2 internal. *Stamens* 15 or 20, or 30; anthers ovate or oblong, rarely linear; connective subulate-cuspidate, rarely inappendiculate; valves obtuse, rarely cuspidate, equal, or the outer slightly larger. *Ovary* 3-celled, cells 2-ovuled; style subulate, stigma entire or 3-toothed. *Fruit* with leathery, rarely with woody, pericarp, 1-celled, 1-seeded, closely surrounded by the bases of the persistent, usually accrescent, sepals, the 3 outer, or more rarely, all, and sometimes none, of which are developed into 7- to 10-veined reticulate membranous linear-oblong wings. *Cotyledons* fleshy, unequal, usually enclosing the superior radicle. *DISTRIB*—Tropical Asia and chiefly the Malayan Archipelago species about 60.

SECT. I. EU-SHORLA. Fruit little more than .5 in. long, its pericarp leathery: three of the persistent sepals developed into membranous wings many times longer than the fruit.

Anthers without apical appendages.

Lower surface of adult leaves minutely stellate-tomentose, not scaberulous ... 1. *S. leprosula*.

Lower surface of adult leaves glabrescent, the axils of the nerves scaly ... 2. *S. scutulata*.

Lower surface of adult leaves quite glabrous, of young leaves glaucous ... 3. *S. Curtisii*.

Anthers mostly inappendiculate, a few with a minute apical appendage from the connective.

Stamens 30 4. *S. sericea*.

Anthers with very short apical appendages from the connective; flowers sessile.

Leaves 2.5 to 4 in. long, the lower surfaces minutely pubescent. flower .25 in. long; fruit ovoid-globose, its largest wings 2.5 in. long ... 5. *S. parvifolia*.

Leaves 3 to 4.5 in. long, glabrous beneath: flower .3 in. long; fruit turbinate, its largest wings 3.5 in. long ... 6. *S. acuminata*.

Leaves 4 to 6 in. long, glabrescent or glabrous beneath; fruit narrowly ovoid, its longest wings 3.5 to 4.5 in. long. ... 7. *S. macroptera*.

Apical appendage from the connective much longer than the anther.

Leaves glabrous on both surfaces, the lower not pale.

Stamens 10 (?) 8. *S. Marwelliana*.

Stamens 20 9. *S. pratensis*.

Stamens 15

Flowers 2 to 25 in. long.

Main nerves of leaves 9 to 10 pairs,
faint; petals not saccate at base;
ovary ovoid-conical, tomentose,
style short ... 10. *S. Ridleyana*.

Main nerves 6 or 7 pairs; petals
saccate at base; ovary hemis-
pheric, style long and slender ... 8. *S. Maxwelliana*.

Flowers 4 in. long, main nerves 9 to
11 pairs; style 3 times as long
as the globose ovary ... 11. *S. pauciflora*.

Flowers 5 in. long, main nerves of
leaves 6 to 8 pairs; ovary elongate-
conic, style short, petals linear-
oblong ... 12. *S. Kunstleri*.

Flowers 65 in. long, nerves of leaves
12 to 16 pairs; ovary ovoid, style
long, filiform, petals ovate-lanceolate ... 13. *S. bracteolata*.

Leaves glaucous beneath ... 14. *S. glauca*.

Apical appendage of the connective with 3 to 5,
or many cilia.

Stamens 30: cilia radiating from the tip
of the apical process of all the anthers ... 15. *S. ciliata*.

Stamens 20: apical appendages of all the
anthers with numerous cilia; petals
broad, spreading ... 16. *S. utilis*.

Stamens 15: anthers of outer row with
ciliate apical appendages ... 17. *S. costata*.

Anthers with a single apical appendage from
each cell, and a short one from the connec-
tive; sepals imbricate at their bases only ... 18. *S. stellata*.

Species imperfectly known.

Bracteoles large, persistent, scaberulous, stel-
late-pubescent ... 19. *S. Maranti*.

Stipules large, paired, persistent ... 20. *S. eximia*.

SECT. II. PACHYCLAMYS, (Dyer). Fruit more than 1 in. long, its
pericarp thick and woody, embraced in its lower half by a cup
formed of the enlarged sepals, the bases of which are thickened
woody and concave, the apices of the outer three produced into
membranous wings as long as, or slightly longer than, the fruit.

Anthers of inner row inappendiculate, those
of the other two rows appendiculate ... 21. *S. Thiseltoni*.

1. *SHOREA LEPROSCULA*, Miq. Fl. Ind. Bat. Suppl. I, 487. A tree 100 to 150 feet high: young branches rather slender, lenticellate, minutely and deciduously pale stellate-tomentose. *Leaves* coriaceous, elliptic to oblong, acute or sub-acute, the base rounded; upper surface glabrous, harsh from the prominent minute reticulations, the midrib and nerves sometimes puberulous; lower surface minutely fuscous-tomentose, with numerous densely stellate hairs on the midrib nerves and veins; main nerves 10 to 13 pairs, straight, oblique, prominent beneath; length 3 to 6 in., breadth 1.25 to 3.25 in., petiole .35 to .75 in. *Panicles* axillary and terminal, 1.5 to 4 in. long, rachis and branches stellate-tomentose, the short flower-bearing branchlets sericeous. *Flowers* in two rows, secund, .3 in. long, sessile. *Sepals* ovate, minutely velvety outside. *Petals* three times as long as the sepals, sericeous outside, oblong-spathulate. *Stamens* about 15; the filaments dilated, much longer than the short ovate inappendiculate anthers. *Ovary* ovoid, minutely tomentose, tapering upwards into the long slender style; stigma minute. *Ripe fruit* narrowly ovoid, apiculate, minutely tomentose, 6 in. long. *Calyx-rings* all enlarged and membranous, concave at the base so as to embrace the ripe fruit, but not adnate to it; the three outer narrowly oblong, sub-acute at the apex, narrowed at the base, 7-nerved, reticulate, 3 in. long and about 7 in. broad; the two inner smaller, about 1 in. long, ovate, caudate-acuminate, not nerved. A. DC. Prod. XVI. 2, 631. Scheff. in Tijdschr. Ned. Ind. XXXI, 350. Hook. fl. Fl. Br. Ind., I., 305. Burek in Ann. Jard. Bot. Buitenzorg, VI, 215. *Shorea astrosicta*, Scortechini MSS.

Malacca: Maingay (Kew. Distrib.), No. 203. Perak, King's Collector, Nos 7646, 7905, 8192; Scortechini, No 2063. DISTRIB. Sumatra.

2. *SHOREA SCUTILLARIA*, King, n. sp. A large tree; young branches with dark lenticellate bark and minute white stellate pubescence. *Leaves* elliptic, shortly abruptly and bluntly acuminate; the base broad, rounded, almost truncate: upper surface glabrous, minutely reticulate; the lower, and especially the midrib, sparsely stellate-puberulous when young, glabrescent when old, the sides of the midrib, and especially the pits in the axils of the nerves, with numerous minute brownish pale-edged scales; length 3 to 3.5 in., breadth 1.5 to 1.75 in., petiole .3 in. *Panicles* axillary and terminal, 3 to 4 in. long, the branches short, each bearing 2 or 3 bracteolate flowers; bracts broadly ovate, concave, blunt, hoary-puberulous, deciduous. *Flowers* .4 in. long, shortly pedicelled. *Sepals* broadly lanceolate, obtuse, tomentose outside, glabrous inside. *Petals* oblong, obtuse, the base expanded.

at one side, glabrous inside and on one half outside, pubescent on the other. *Stamens* 15, in 3 rows; all the filaments broad, those of the outer two rows shorter than those of the inner: anthers short, broadly ovate, inappendiculate. *Ovary* conical, pale tomentose: style short, stigma small. *Fruit* (perhaps not mature) ovoid, apiculate, minutely pale tomentose, .6 in. long. *Sepals* all enlarged, membranous, reticulate, concave at the base; the three outer narrowly oblong, obtuse, very little narrowed to the base, 7-nerved, 2.75 in. long and .75 in. broad; the two inner .8 in. long, linear, about 1-nerved.

Penang: Curtis, No. 1396.

A species known only from Penang, and collected only by Mr. Curtis: remarkable for its almost racemose inflorescence, and curiously glandular leaves.

3. *SHOREA CURTISII*, Dyer MSS. in Herb. Kew. A tree 100 to 150 feet high; young branches slender, at first minutely stellate-puberulous, ultimately dark-coloured and glabrous. *Leaves* coriaceous, oblong-lanceolate, bluntly acuminate; the base sub-cuneate, or almost rounded; upper surface of young leaves minutely pubescent, of adults glabrescent or quite glabrous, the lower uniformly covered with very minute rufescent (young), or pale (adult) tomentum: main nerves 10 to 14 pairs, ascending, rather straight, prominent beneath: length 3 to 4 in., breadth 1.2 to 1.4 in., petiole .4 to .6 in. *Panicles* axillary or terminal, 2 to 3 in. long, the rachis slender, glabrous. *Flowers* about .3 in. long, in distichous second rows of 4 or 5, on the short lateral branchlets, enveloped while in bud by broad deciduous puberulous bracts. *Sepals* ovate, tomentose outside, glabrous inside, slightly unequal. *Petals* twice as long as the calyx, linear-oblong, obtuse, stellate-pubescent outside, glabrous inside. *Stamens* 15, in three rows; the filaments elongate, broad (those of the outer row longest); anthers short, ovoid-globose, not apiculate. *Ovary* elongated ovoid, tomentose in the upper, glabrous in the lower half: style short, stigma small. *Ripe fruit* narrowly ovoid, apiculate, .75 in. long, pale tomentose; *calyx-wings* all enlarged and membranous, free from the fruit: the three outer linear-oblong, 8-nerved, 2.25 in. long, and about .5 in. broad; the two inner about 1 in. long, bluntly spatulate and with fewer nerves.

Penang: Curtis, Nos. 427, 1394 and 1395.

Perak: King's Collector, No. 8143.

The vernacular name of this in Penang is *Maranti Tai*.

4. *SHOREA SERICEA*, Dyer in Hook. fil. Fl. Br. Ind., I., 306. A tree 40 to 60 feet high; young branches rugulose, warted and scurfily
J. N. 15

rufous-tomentose as are the inflorescence and petioles. *Leaves* coriaceous, oblong or elliptic-oblong (rarely slightly ob-ovate), very shortly acuminate or sub-acute, slightly narrowed to the rounded or sub-cuneate base; upper surface shining, sparsely stellate-tomentose, the depressed midrib and nerves puberulous; lower surface scaberrulous, more densely stellate-pubescent, especially on the bold midrib and 20 to 22 pairs of stout spreading main nerves; length 3·5 to 6·5 in., breadth 1·5 to 2·75 in., petiole ·6 to 8 in. *Panicles* axillary and terminal, 3 to 7 in. long, the ultimate branches bearing 4 or 5 distichous, secund, bracteate, sessile flowers; bracts broadly ovate, puberulous outside. *Sepals* ovate, the two inner smaller, all densely golden-sericeous outside, glabrous inside. *Petals* like the sepals and of about the same length, the inside and one-half of the outer glabrous, the other half adpressed-sericeous. *Stamens* about 40, in several rows, the filaments of the outer shorter, all longer than the anthers; anthers ovate, mostly inappendiculate, a few with a minute appendix. *Ovary* elongated, conic, sericeous; the style short, glabrous; stigma small. *Fruit* (immature) narrowly ovoid, 5 in. long, embraced by, but not adnate to, the accrescent membranous calyx-wings: the outer 3 calyx-wings linear-oblong obtuse, narrowed to the base, 3·5 in. long and ·6 in. broad, 10-nerved; the 2 inner 2·5 in. long and much narrower and fewer-nerved, sparsely pubescent.

Malacca: Maingay (Kew. Distrib.) No. 202. Penang: Curtis, No. 431. Perak: King's Collector, No. 3511.

This resembles *S. lacunosa* Scheff., but differs in not having persistent stipules. Its vernacular name in Penang is *Seraya*.

5. *SHOREA PARVIFOLIA*, Dyer in Hook. fil. Fl. Br. Ind., I., 305. A tree 100 to 150 feet high; young branches slender, pale tomentose at first, ultimately glabrous, dark-coloured and lenticellate. *Leaves* coriaceous, ovate to ovate-lanceolate, caudate-acuminate, the base sub-cuneate or almost rounded; upper surface glabrous (when young the midrib tomentose or pubescent); under surface sparsely scaly-pubescent when young, when adult minutely pubescent, the transverse veins thick; main nerves 9 to 12 pairs, oblique, rather straight, prominent beneath; length 2·5 to 4 in., breadth 1 to 1·8 in.; petiole ·35 to ·45 in., tomentose when young. *Panicles* axillary and terminal, crowded near the ends of the branches, 2 to 4 in. long, rather lax, spreading, many-flowered, minutely tomentose, the branches distichous. *Flowers* ·25 in. long, secund, distichous, deciduously bracteate. *Sepals* slightly unequal, ovate, acute, tomentose outside, glabrous inside. *Petals* twice as long as the sepals, obliquely elliptic, obtuse, glabrous, except on one-half outside which is silky. *Stamens* 15, or fewer; the filaments flattened.

ed, about 4 times as long as the broad short anthers; apiculus of connective very slender, about as long as the anther, deflexed. *Ovary* elongate, puberulous; style rather short; stigma small. *Ripe fruit* ovoid-globose, 4 in. long, thinly adpressed pale tomentose. *Sepals* all enlarged and membranous, concave at the base so as to embrace the ripe fruit, but not adnate to it: the three outer narrowly oblong, obtuse at the apex, slightly narrowed to the base; 7-nerved, 2.5 in. long; the two inner from one-half to one-third shorter, narrower and fewer nerved. *Shorea disticha*, Scortechini MSS. in Herb. Calcutta.

Malacca: (Kew Distrib.) No. 206. Penang: Curtis, No. 201. Perak: Scortechini, No. 1965. Wray, No. 1282.

6. *SHOREA ACUMINATA*, Dyer in Hook. fil. Fl. Br. Ind. I, 305. A tree 100 to 150 feet high; young branches minutely greyish tomentose, ultimately dark-coloured and glabrescent. *Leaves* coriaceous, ovate to lanceolate, acuminate, the base often unequal-sided, rounded or sometimes emarginate; upper surface glabrous except the puberulous midrib; the lower glabrous, with a few scattered stellate hairs. *main nerves* 7 to 9 pairs, spreading, slightly prominent beneath: length 3 to 4.5 in., breadth 1.75 to 2.5 in.; petiole .3 to .4 in., tomentose. *Panicles* axillary and terminal, crowded near the extremities of the branches, 2 to 3 in. long, minutely stellate-pubescent, many-flowered. *Flowers* 3 in. long, distichous, secund, about 5 on each lateral branch, bracteolate. *Sepals* ovate, unequal, tomentose outside, glabrous inside. *Petals* twice as long as the calyx, spreading, broadly ovate, puberulous outside, glabrous inside. *Stamens* 15, in three rows, the inner row shorter: filaments broad, much larger than the short, ovate, minutely appendiculate anthers. *Ovary* ovoid, tapering, pubescent, style short, stigma small. *Ripe fruit* turbinate, with 3 slightly vertical grooves, apiculate, puberulous, 5 in. in diam., attached by its base to the calyx: *sepals* all enlarged, concave at the base so as completely to cover the fruit, membranous and reticulate; the 3 outer narrowly oblong obtuse, contracted towards the base, 10- or 11-nerved, 3.5 in. long, and 7 in. broad; the two inner 1 to 1.5 in. long, under .25 in. broad, 3- to 4-nerved.

Malacca: Maingay (Kew Distrib.) No. 205 (?). Griffith, No. 1762.

Perak: King's Collector, No. 8009.

7. *SHOREA MACROPTERA*, Dyer in Hook. fil. Fl. Br. Ind. I, 308. A tree 60 to 80 feet high: young branches with dark-brown bark, minutely lenticellate and puberulous. *Leaves* coriaceous, oblong (usually narrowly), shortly acuminate, the base sub-cuneate or rounded: upper surface glabrous, shining, the midrib and nerves puberulous: lower

surface glabrescent or glabrous, chocolate-coloured when dry: main nerves 10 to 12 pairs, curved, spreading, prominent on the lower surface; length 4 to 6 in., breadth 1·35 to 1·75 in.; petiole ·4 to ·5 in., rugose. *Panicles* axillary or terminal, 4 to 7 in. long, lax, branching, few-flowered, puberulous, sparsely scaly. *Flowers* about ·5 in. long, sessile, solitary, not secund. *Sepals* distinct almost to the base, slightly unequal, broadly-ovate, acute, more or less yellowish-tomentose outside, glabrous inside. *Petals* narrowly oblong, slightly oblique at the base, the apex blunt, glabrous except one-half of the outer surface which is sericeous. *Stamens* 15, in two rows; filaments broad except at the apex, those of the outer two rows by much the shorter: anthers short, ovate, the connective minutely awned. *Ovary* elongated-ovoid, sericeous in its upper half; style short, stigma small. *Ripe fruit* ·6 to ·75 in. long, narrowly ovoid, pale puberulous, apiculate: *sepals* all enlarged and reticulate, slightly concave at the base and embracing, but not adnate to, the fruit; the three outer narrowly oblong, obtuse, tapering slightly to the auricled base, 7-nerved, 3·5 to 4·5 in. long, and ·8 to 1 in. broad; the two inner variable, but shorter, narrower and fewer nerved. *Shorea auriculata*, Scortechini MSS. in Herb., Calcutta.

Malacca: Maingay. Singapore: Ridley. Penang: Curtis, No. 1392. Perak: very common, King's Collector, Scortechini.

A species from Borneo which closely resembles this appears to me to differ specifically. Its leaves are longer with sparser nerves, and its calyx-wings are longer.

8. *SHOREA MAXWELLIANA*, King, n. sp. A tree 60 to 80 feet high: young branches dark-coloured, almost glabrous. *Leaves* coriaceous, ovate-lanceolate, acuminate (caudate-acuminate when young), the base unequal-sided, cuneate; both surfaces quite glabrous, the upper shining, the lower chocolate-coloured when dry: main nerves 6 or 7 pairs, curved, spreading, thin and inconspicuous: length 3 to 4 in., breadth 1·3 to 1·5 in., petiole ·4 in. *Panicles* axillary and terminal, 2·5 to 3 in. long, stellate-puberulous, their lateral branches very short and few-flowered. *Flowers* shortly pedicelled. *Sepals* unequal, oblong, blunt, with enlarged concave bases, more or less pubescent, but glabrous in the concavity of the base inside. *Petals* oblong, concave and saccate at the base, tomentose outside, glabrous inside. *Stamens* 10 (?), the filaments short, broad; the anthers elongate, erect, pointed, the connective ending in an awn as long as the anther. *Ovary* hemispheric; the style long, slender; stigma minute. *Fruit* (not mature) globular, minutely tomentose, closely invested by, but not adnate to, the concave bases of the sepals: *sepals* all enlarged, membranous, narrowly oblong, obtuse.

the three outer 7-nerved, 1·5 in. long and 4 in. broad; the two inner similar in shape, but fewer-nerved and only 5 in. long.

Perak: King's Collector, Nos. 3601 and 3744.

The only flowers of this species which I have seen are in an early stage of bud, and from them I am unable to make out the characters of the petals properly. The stamens appear to be only 10 in number: but of this I cannot now be quite certain.

9. *SHOREA GRATISSIMA*, Dyer in Hook. fil. Fl. Br. Ind. I, 307. A tree: younger branches slender, glabrescent, dark-coloured. *Leaves* coriaceous, elliptic, acuminate, the base broad and rounded, the margins sub-undulate, both surfaces glabrous: main nerves 12 to 14 pairs, faint; length 2·5 to 4 in., breadth 1·25 to 1·5 in., petiole 4 to 7·5 in. *Panicles* axillary and terminal, lax, few-flowered, 3 to 6 in. long, sub-puberulous. *Flowers* secund, pedicelled, 25 in. long. *Sepals* lanceolate, sub-acute; minutely tomentose outside, glabrous inside in the lower, adpressed-pubescent in the upper, half. *Petals* twice as long as the calyx and much broader, elliptic, obtuse, glabrescent. *Stamens* about 20; the filaments short, unequal, dilated. *Anthers* elongated-ovate, truncate, each with a terminal awn from the connective twice as long as itself. *Ovary* ovoid, sub-glabrous; stigma small. *Ripe fruit* unknown. *Hopea gratissima*, Wall. Cat. 960.

Singapore: Wallich.

This is known only by Wallich's specimens. He referred it to *Hopea*, of which genus it certainly has the *facies*: the aestivation of the sepals is moreover that of *Hopea*, and so is the apiculus of the connective of the stamens. The petals in shape, however, resemble those of *Shorea*. I retain it in *Shorea* in deference to the opinion of Mr. Dyer.

10. *SHOREA RIDLEYANA*, King, n. sp. A tree 60 or 80 feet high: young branches slender, dark brown, lenticellate, nearly glabrous. *Leaves* ovate-lanceolate, shortly acuminate, the base rounded: both surfaces glabrous, the upper shining: main nerves 9 or 10 pairs, curved, spreading, thin but slightly prominent beneath: length 2·5 to 4 in., breadth 1·1 to 2 in.; petiole 4 to 5 in., rugulose. *Panicles* axillary and terminal, 1·5 to 2 in. long, densely stellate-puberulous. *Flowers* 2 in. long, pedicellate. *Sepals* sub-equal, oblong, obtuse, tomentose outside, glabrous inside. *Petals* oblong, slightly oblique, obtuse, glabrous inside, puberulous outside on one half, glabrous on the other. *Stamens* 15, sub-equal, the filaments dilated in the lower half: anthers shorter than the filaments, ovate, the connective produced into an awn longer than the anther. *Ovary* ovoid-conical, minutely tomentose. *Style* short; *stigma* minute. *Fruit* (immature) ovoid, apiculate, minutely

pale tomentose: *sepals* all enlarged, membranous, reticulate and concave at the base; the three outer linear-oblong, obtuse, slightly narrowed to the concave base, 5-nerved, 2.25 in. long and .4 in. broad; the two inner of the same shape, but only 1-nerved, narrower and only 1.5 in. long.

Perak: King's Collector, Nos. 3571 and 3617.

This a good deal resembles *S. Maxwelliana*, King; but its leaves have more nerves, its slightly oblique petals are not saccate at the base, its ovary is ovoid-conical, and minutely tomentose with a short style; whereas in *S. Maxwelliana* the petals are succate at the base, and the ovary is hemispheric with a long style.

11. *SHOREA PAUCIFLORA*, King, n. sp. A tree 50 to 90 feet high: young branches slender, their bark brown puberulous and lepidote. *Leaves* thinly coriaceous, from oblong to elliptic, shortly acuminate; the base abruptly cuneate, slightly unequal-sided, or (in the elliptic forms) almost rounded: main nerves 9 to 11 pairs, oblique, straight, prominent beneath: length 4 to 5 in., breadth 1.8 to 2.5 in., petiole .6 to .7 in. *Panicles* few, axillary or terminal, few-flowered, 1.75 to 4 in. long, rather coarsely pubescent. *Flowers* .4 in. long, secund, shortly pedicellate, each subtended by an ovate, solitary, puberulous, deciduous bract. *Sepals* broadly ovate, tomentose outside, glabrous inside. *Petals* broadly elliptic, obtuse, concave at the base, veined, inside glabrous, the outside half glabrous and half adpressed-sericeous. *Stamens* 15, in 3 rows: the outer row smaller and with filiform filaments, the inner rows with filaments longer and expanded in the lower half; the anthers of all shortly ovate, the connective produced into an awn twice as long as the stamen. *Ovary* hemispheric, tomentose; style nearly 3 times as long, puberulous; stigma small. *Ripe fruit* unknown.

Penang: Curtis, No. 1537.

A species known only by Mr. Curtis' specimens which have no fruit.

12. *SHOREA KUNSTLERI*, King, n. sp. A tree 60 to 100 feet high: young branches slender, rusty-puberulous, their bark brown. *Leaves* coriaceous, elliptic, abruptly and shortly acuminate, the base rounded or slightly cuneate, both surfaces glabrous, the lower with a few stiff white hairs on the midrib and nerves; main nerves 6 to 8 pairs, curved, ascending, prominent on the lower surface; length 4 to 5 in., breadth 2 to 2.4 in., petiole .5 in. *Panicles* axillary and terminal, 4 to 6 in. long, lax, few-flowered, scaly-puberulous. *Flowers* .5 in. long, sub-sessile, 4 or 5 together on the short branches of the panicles, secund, bracteate: the bracts broadly ovate, puberulous. *Sepals* sub-equal,

broadly ovate, acute, tomentose outside; the edges ciliate, glabrous inside. *Petals* linear-oblong, obtuse; the bases obliquely expanded, sericeous externally, glabrous internally. *Stamens* 15, sub-equal, the filaments as long as the anthers, flattened; anthers ovate, short, the connective terminated by a curved awn much longer than the stamen. *Ovary* elongate-conic, puberulous; style short. *Ripe fruit* hemispheric, tapering into a cone and crowned by the style, adpressed pale tomentose. *Sepals* membranous, reticulate: the three larger narrowly oblong, obtuse, tapering to the concave non-reticulate base, 9-nerved, 3·5 in. long and 7 in. broad: the two inner 2 in. long, linear, 3-nerved.

Perak: King's Collector, Nos. 3474 and 3705.

This species is allied to *S. bracteolata*, Dyer, but its leaves have fewer nerves, smaller flowers, narrower petals, and a short style.

13. *SHOREA BRACTEOLATA*, Dyer in Hook. fil. Fl. Br. Ind. I, 305. A tree 50 to 150 feet high; young branches minutely furfuraceous-puberulous, speedily glabrescent, their bark dark-coloured. *Leaves* coriaceous, elliptic-oblong, shortly acuminate (often sub-obtuse when old), narrowed slightly to the rounded or emarginate base; upper surface quite glabrous; the lower yellowish furfuraceous-puberulous to glabrous; main nerves 12 to 16 pairs, spreading, prominent beneath: length 4 to 6 in., breadth 1·6 to 2·5 in., petiole 45 to 6 in. *Panicles* axillary, few-flowered, 2·5 to 6 in. long, glabrous. *Flowers* 65 in. long, shortly pedicellate, each subtended by 2 elliptic, obtuse, 3-nerved, puberulous, deciduous bracts 35 in. long. *Sepals* lanceolate, obtuse, minutely tomentose outside, the two inner smaller. *Petals* ovate-lanceolate, obtuse; the bases expanded, glabrous. *Stamens* 15, in two rows, the filaments less than half as long as the ovate obtuse anthers; appendix of connective subulate, twice as long as the anther, decurved when old. *Ovary* ovoid, attenuated upwards, sub-glabrous; the style long, filiform; stigma small. *Ripe fruit* ovoid, apiculate, 6 in. long, embraced by, but (except at the very base) free from the calyx; *sepals* accrescent, membranous, reticulate and concave at the base: the three outer narrowly oblong, blunt, slightly narrowed above the concave base, 10-nerved, 3·5 in. long, and 6 in. broad; the two smaller about 2 in. long, and 2 in. broad, about 3-nerved. *Shorea foveolata*, Scortechini MSS. in Herb. Calcutta.

Malacca: Maingay (Kew Distrib.) No. 204. Penang: Curtis, Nos. 322 and 1405. Perak: King's Collector, Nos. 7583, 7591, 7717; Scortechini, No. 1939. **DISTRIB.**—Sumatra. Forbes, No. 3050.

14. *SHOREA GLAUCA*, King, n. sp. A tree 80 to 100 feet high; young branches slender, dark-coloured, puberulous. *Leaves* coriaceous, ovate-lanceolate, acuminate; the base broad, rounded; upper surface

glabrous, the lower glaucous (except the midrib and nerves) especially when young; main nerves 7 to 9 pairs, ascending, rather straight: length 3·5 to 4·5 in., breadth 1·4 to 1·8 in.; petiole ·45 to ·6 in., rugulose, glaucous. *Panicles* axillary, few-flowered, shorter than the leaves, hoary, the flowers on short pedicels. *Sepals* slightly unequal, oblong, obtuse, tomentose on both surfaces. *Ovary* conical, tomentose; the style very short, glabrous; stigma small, 3-lobed. *Fruit* (immature) ovoid-globose, apiculate, minutely tomentose; accrescent sepals membranous, free from the fruit; obscurely 7- to 12-nerved, strongly reticulate, blunt, slightly narrowed to the concave base, at first puberulous but ultimately glabrous; the longer 2·25 in. long, and ·6 to ·75 in. broad, the others smaller.

Penang: Curtis, No. 372. Malacca: Maingay (Kew Distrib.), 212.

In this species the two inner fruiting wings of the calyx are nearly as large as the three outer; the leaves are very white underneath when young, but much less conspicuously so when adult. It is known, only by Curtis' and Maingay's specimens, none of which have complete flowers. Maingay's specimens from Malacca have in fact no flowers; but there is no mistaking their leaves as being exactly like those of Mr. Curtis' from Penang. The vernacular name of this is *Dammar laut dhan lesor*.

15. *SHOREA CILIATA*, King, n. sp. A medium-sized tree; young branches slender, dark-coloured, deciduously hoary-puberulous. *Leaves* coriaceous, lanceolate or oblong-lanceolate, acuminate, the base cuneate; both surfaces glabrous, minutely reticulate, the lower whitish when young, pale brown when dry; main nerves 8 or 9 pairs, ascending, curved, shining on the lower surface: length 3 to 3·5 in., breadth ·8 to 1·5 in., petiole ·75 to ·9 in. *Panicles* 2 to 2·5 in. long, axillary and terminal, little-branched, few-flowered, hoary. *Flowers* ·5 in. long, secund. *Sepals* ovoid-deltoid, obtuse, outside tomentose, inside glabrous. *Petals* three times as long as the sepals, narrowly oblong, obtuse, slightly expanded at the base, adpressed-sericeous outside, glabrescent inside. *Stamens* 30, in fascicles of 3, unequal, the shorter with undilated filaments, the longer with filaments dilated in the lower half; all with the connective produced into an apical process crowned by 3 to 5 spreading cilia. *Ovary* ovoid-conic, sericeous, with a short glabrous style. *Fruit* (immature) ovoid, apiculate, pale-tomentose, ·5 in. long; accrescent sepals membranous, reticulate: the three outer narrowly oblong, reticulate, 7-nerved: the two inner 2 in. long, and ·3 in. broad, narrowed to above the concave base: the two inner 1 in. long, linear-lanceolate, few-nerved.

Penang: Curtis, No. 1578.

Known only by Curtis' specimens, and readily recognisable by its beautifully ciliate-crested anthers.

16. *SHOREA UTILIS*, King, n. sp. A large tree; all parts except the inflorescence glabrous: young branches slender, dark-coloured. *Leaves* coriaceous, ovate-lanceolate, caudate-acuminate, or shortly and abruptly acuminate, the base slightly cuneate; main nerves about 7 pairs, oblique, not prominent on either surface; length 2·5 to 3 in., breadth ·9 to 1·2 in., petiole ·4 in. *Panicles* axillary, stellate-puberulous, about as long as the leaves; their lateral branches distant, very short, minutely tomentose, 3- or 4-flowered. *Flowers* sub-sessile, globular in bud, under ·2 in. long. *Sepals* ovate-orbicular, blunt, the outer 3 very tomentose outside, the inner 2 less so; all glabrous inside. *Petals* broadly oblong, blunt, more or less sericeous in both surfaces. *Stamens* 20; filaments slightly dilated, about as long as the ovate anthers; apical process of connective about as long as the anther, ciliate. *Ovary* sericeous, elongated-conic, gradually tapering into the short glabrous style; stigma minute. *Ripe fruit* ovoid, apiculate, pale, adpressed-sericeous, ·4 in. long, closely invested by, but free from, the concave bases of the accrescent sepals. *Sepals of fruiting calyx* all enlarged, membranous, reticulate, deciduously puberulous; the 3 outer oblong, very obtuse, 5-nerved, 1·25 in. long, and ·4 in. broad; the inner 3 half as long, or less, and much narrower.

Penang: Curtis, No. 423.

This species, which Mr. Curtis describes as yielding the most durable timber in Penang, was at one time quite common there, but it is now almost extinct. Its vernacular name is *Dammar laut*.

17. *SHOREA COSTATA*, King, n. sp. A tree; young branches dark-coloured, lepidote-puberulous. *Leaves* thinly coriaceous, oblong, sub-acute, slightly narrowed to the rounded or sub-cuneate base; both surfaces glabrous, the transverse veins distinct, especially on the lower: main nerves 11 to 13 pairs, oblique, rather straight, slightly prominent beneath; length 3 to 4·25 in., breadth 1·2 to 1·5 in., petiole ·8 to 1 in. *Panicles* axillary and terminal, 1·5 to 2·5 in. long, scaly-puberulous, the lateral branches very short and few-flowered. *Flowers* small. *Sepals* broadly ovate, yellowish-tomentose outside, glabrous inside. *Stamens* 15; all with dilated filaments longer than the ovate anthers, those of the inner row with the apical process of the connective short and glabrous, those of the outer rows with longer ciliate apical connectives. *Ovary* ovoid-conical, densely yellowish-tomentose; style very short. *Ripe fruit* ovoid, apiculate, sparsely puberulous, ·75 in. long; sepals all enlarged, concave and dilated at the base, membranous and reticulate; the three outer narrowly oblong, obtuse, much

narrowed to the base, 7-nerved, 2·75 in. long, and ·45 in. broad; the two inner of the same shape, but few-nerved, only 1·5 in. long, and ·25 in. broad.

Penang: Curtis, No. 199.

A species known only by Mr. Curtis' solitary specimen. The connectives of the inner anthers are ciliate, somewhat in the fashion of *S. ciliata*, King; but the leaves of that species are very different.

18. *SHOREA STELLATA*, Dyer in Hook. fil. Fl. Br. Ind. I, 304. A tree 100 to 150 feet high; young branches slender, at first stellate-puberulous, but speedily glabrous, with bark dark-coloured and sparsely lenticellate. *Leaves* thinly coriaceous, ovate-lanceolate, the base rounded: upper surfaces glabrous, the lower very minutely lepidote on the reticulations; main nerves 8 to 11 pairs, rather straight, oblique, prominent on the lower surface; length 4 to 5·5 in., breadth 1·75 to 2·25 in., petiole ·7 to ·9 in. *Panicles* axillary or terminal, crowded at the extremities of the branches, many-flowered, 4 to 6 in. long; minutely stellate-pubescent. *Flowers* ·25 in. in diam. *Calyx* minutely greyish-tomentose, the segments ovate-oblong, sub-acute, valvate, erect. *Petals* broadly ovate, obtuse, pubescent outside, spreading. *Stamens* 15; the filaments short, broad; the anthers linear-elongate, shortly bi-mucronate, the connective also shortly mucronate. *Ovary* ovate-globular, grooved, very tomentose; the style short; the stigma ovoid, small. *Ripe fruit* ovoid, apiculate, tomentose, ·5 in. long; sepals all enlarged, subequal, membranous, linear-oblong, sub-acute, much narrowed at the base, quite free from the fruit, 5-ribbed, reticulate, 4·5 in. long, and about ·6 in. broad. *Parashorea stellata*, Kurz, Journ. As. Soc., Bengal, for 1870, pt. 2, p. 66. For. Flora Burm., I, 117; Pierre Flore Forest. Coch-Chine, t. 224.

Perak: King's Collector, No. 7505. *DISTRIB.* Burmah.

None of the Perak specimens are in fruit; but in leaves and flowers they agree absolutely with Kurz's Burmese specimens. The calyx in all is quite valvate, and it was on this character chiefly that Kurz based the genus *Parashorea*.

19. *SHOREA MARANTI*, Bueck in Ann. Jard. Bot. Britenzorg, VI. 217. A small tree: young branches dark-coloured, stellate-puberulous. *Leaves* thinly coriaceous, more or less broadly elliptic or elliptic-oblong, shortly abruptly and bluntly acuminate; the base broad, rounded, or almost truncate; upper surface glabrous, the midrib and nerves minutely tomentose or pubescent when young; lower surface more or less sparsely minutely stellate-puberulous, the sides of the midrib, especially at the axils of the main nerves, glandular and densely covered with masses of brown pale-edged scales: main nerves 12 to 16 pairs, oblique,

slightly curved, thin but prominent beneath when dry, as are the transverse veins; length 3·5 to 6·5 in., breadth 1·5 to 2·25 in.; petiole ·35 in., densely stellate-pubescent, scurfy. *Stipules* deciduous, ovate-lanceolate, nerved, stellate-puberulous. *Panicles* axillary and terminal, few-flowered, tawny-tomentose, (shorter than the leaves [?]); the bracts in pairs, unequal, elliptic-oblong, blunt, nerved, pubescent on both surfaces. "Segments of calyx (fide Burek) unequal, the three outer larger, imbricate. *Petals* minutely tomentose inside. *Stamens* 15, in two rows." *Hopea? Maranti*, Miq. Fl. Ind. Bat. Suppl., 489; A. DC. Prod. XVI, 2, p. 635.

Perak: King's Collector, No. 880. Malacca: Derry, No. 952.
DISTRIB. Sumatra, Bangka.

The Perak specimens are not in flower; and I have seen none from elsewhere that are. The above imperfect description of the flower has therefore been copied from Burek (Ann. Jard. Bot. Buitenzorg, VI. 217). The Perak specimens perfectly agree, as to leaves, with an authentic specimen of Miquel's from Sumatra, in the Calcutta Herbarium. Miquel never saw either flower or fruit. In fact, of the twenty new species of *Dipterocarpaceæ* described by this author in the supplement to his Flora of the Netherlands India, the flowers are described in only two, and in these but partially!

20. *SHOREA EXIMIA*, Scheff. in Nat. Tijdschr. Ned. Ind. XXXI, 349. A shrub or small tree; young branches petioles and under-surfaces of leaves stellate-setulose. *Leaves* coriaceous, elliptic-oblong, or ob-lanceolate-oblong, acuminate, narrowed to the rounded or sub-cuneate base: upper surface glabrous except the tomentose midrib, shining, the nerves depressed: under surface scabrid, pale brown, the reticulations midrib and 17 to 21 pairs of spreading nerves prominent: length 6·5 to 11 in., breadth 2·25 to 3·25 in., petiole ·25 to ·35 in. *Stipules* in pairs, persistent, ovate, acuminate, longer than the petioles, reticulate, laxly pubescent and warted. "*Wings of fruiting-calyx* linear-lanceolate, obtuse: the three larger narrow at the base, 3·2 to 3·6 in. long, ·5 in. broad, sparsely pubescent, 9-nerved; the two shorter and narrower 1·6 in. long. *Fruit* elongated-ovoid, acuminate, minutely whitish-tomentose." Burek in Ann. Jard. Bot. Buitenzorg VI, 218. *Vatica? eximia*, Miq. Fl. Ind. Bat. Suppl. 486; A. DC. Prod. XVI 2, 623. *Vatica sub-lacunosa?* Miq. Fl. Ind. Bat. Suppl. 486. *Shorea sub-lacunosa*, Scheff. in Nat. Tijdschr. Ned. Ind. XXXI, 350: A. DC. Prod. XVI, 2623.

Malacca: Griffith, No. 5018. Penang: King. Perak: King's Collector, 10998. DISTRIB. Sumatra, Bangka.

This plant is very imperfectly known. I have copied the descrip-

tion of the fruit from Dr. Burck (l. c.). Miquel, who first described the plant as a probable *Vatica*, had seen nothing but a leaf-twig. Specimens brought from Perak by the Calcutta collectors bear, instead of flowers, curious cones, 1·5 in. long, of distichous imbricate bracts, concerning which Griffith, in his field note on his specimen No. 5018, wrote,—“irregular growth caused by an insect; each of the scales of these cones bears on its dorsum at its base a number of eggs.” Griffith’s No. 5019 appears to belong to a closely allied, but distinct, species; as also does the indeterminate plant issued by Wallich as No. 6635 of his catalogue, under the designation, “*Dilleniacea* [?] *nervosa*.”

21. *SHOREA THISELTONI*, King, n. sp. A tree 60 to 80 feet high: young branches rather stout, the bark dark-coloured and lenticellate, but covered at first by a pale-grey, deciduous pellicle. *Leaves* coriaceous, elliptic-oblong to elliptic, rarely oblong, sometimes slightly obovate, obtuse, slightly narrowed to the rounded base; both surfaces glabrous, the lower when very young sparsely lepidote, puberulous especially on the midrib and nerves, brown when dry: main nerves 8 or 9 pairs, ascending, slightly curved, bold and prominent on the under surface like the midrib; length 5 to 7 in., breadth 2·5 to 3·25 in.; petiole ·6 to ·8 in., stout. *Panicles* axillary and terminal, 2 to 3 in. long, velvety, few-flowered, apparently ebracteolate. *Flowers* sessile, ·6 or ·7 in. long. *Sepals* ovate, sub-acute, unequal; the 3 outer tomentose outside, glabrous inside; the 2 inner smaller, nearly glabrous, the edges ciliate. *Petals* much longer than the sepals, linear-oblong, obtuse, expanded at the base, glabrous, except one-half of the outer surface which is adpressed-pubescent. *Stamens* 15, in 3 rows, the filaments of all dilated, unequal: the anthers shortly ovate, those of the inner and longer row inappendiculate, those of the other two rows with a short apical appendage from the connective. *Ovary* narrowly conical, tomentose, tapering into the short glabrous style; stigma minute. *Ripe fruit* narrowly ovoid, apiculate, minutely pale-tomentose, substriate, 1·2 in. long, and ·6 in. in diam., the pericarp thick and woody. *Persistent sepals* with much thickened concave woody bases, forming a cup embracing the lower half of the fruit, the apices of the outer three prolonged into membranous linear-oblong obtuse wings exceeding the fruit and sometimes 1·5 in. long; one of the inner sepals shortly winged, the other often broad, obtuse and not winged.

Perak: common. King’s Collector.

In this plant the fruit is much larger than in any of the other species of *Shorea* here described, and its pericarp is hard and thick. The bases of the sepals are greatly thickened and concave, and they form a cup which embraces closely, but does not adhere to, the lower

half of the fruit, the apices of some of them being winged as above described. In these respects the species resembles certain other Malayan species of *Shorea*, e. g., *S. Martiniana* Scheff., *S. seaberrima*, and *S. stenoptera*, Burck. Judging from the leaf-specimens on which Miquel founded his *Hopea Singkawang*, that plant must be a close ally of this. A species (flower only) collected by H. O. Forbes in Sumatra (Herb. No. 2952) must also be closely allied to this. It differs however by its conspicuously bracteolate inflorescence. Beccari's Nos. 2681 and 3507, which form the types of Heim's species *S. brachyptera*, are also allied to this.

6. HOPEA, Roxb.

Glabrous or hoary-tomentose resinous trees. *Leaves* quite entire, firm, feather-veined; stipules small, deciduous or inconspicuous. *Flowers* sessile or shortly pedicelled, ebracteate, in lax panicles of unilateral racemes. *Sepals* inserted on the receptacle, two being quite external and three for the most part internal, obtuse, imbricate. *Petals* falcate, their apices inflexed in bud. *Stamens* 15, or rarely 10, slightly connate; the connective subulate-cuspidate, the anthers ovate, their valves obtuse, equal. *Ovary* 3-celled, the cells 2-ovuled; style shortly cylindric or subulate. *Fruit* 1-seeded, closely surrounded by the bases of the accrescent sepals, the 2 external of which are developed into linear wings, the three internal not longer than the ripe fruit. *Embryo* as in *Shorea*.—DISTRIB. of *Shorea*; species about 35.

Sect. I. Ect-HOPEA, Main nerves of leaves bold and prominent.

Nerves of leaves 16 to 18 pairs; accrescent
sepals 4 to 4.5 in. long, 10-nerved ... 1. *H. nervosa*.

Nerves of leaves 10 to 13 pairs; accrescent
sepals 1.75 to 2.5 in. long, obscurely 5-nerved ... 2. *H. Curtisii*.

Sect. II. DRYOBALANOIDEA, Miq. Main nerves not distinct.

Petals sericeous: the filaments longer than the
anthers; ripe fruit .3 in. long, the accrescent
sepals 7-nerved, 1.75 to 2 in. long, and .2 to
.25 in. broad; leaf-petioles .25 to .4 in. long,
minutely tomentose... ... 3. *H. micrantha*.

Petals densely sericeous; the filaments shorter
than the anthers; ripe fruit .2 in. long; ac-
crescent sepals obscurely 5- to 7-nerved, 1.25
to 1.5 in. long, and .25 in. broad; leaf-petioles
.35 to .6 in. long, slender, puberulous, finally
glabrous 4. *H. intermedia*.

1. *HOPEA NERVOSA*, King, n. sp. A tree 50 to 70 feet high: young branches dark-coloured, glabrous. *Leaves* coriaceous, oblong to elliptic-oblong, shortly acuminate, the base rounded or very slightly cuneate; both surfaces glabrous; main nerves 16 to 18 pairs, spreading, bold and prominent on the lower; length 3·5 to 5 in., breadth 1·5 to 2·25 in.; petiole ·5 to ·75 in., transversely wrinkled when dry. *Flowers* unknown. *Ripe fruit* ovoid-rotund, apiculate, glabrous, ·5 in. long; the two outer sepals much enlarged, oblong-lanceolate, obtuse, slightly narrowed to the concave thickened smooth base, 10-nerved, 4 to 4·5 in. long, and ·6 to ·75 in. wide; the three inner sepals not quite so long as the fruit, broadly ovate, obtuse, thickened, smooth, closely embracing but not adherent to the fruit.

Perak: King's Collector, No. 3690.

This is a very distinct species, belonging to the group of *Hopea* with the nerves of the leaves bold. It is so distinct that, contrary to my general practice, I venture to name it without having seen the flower.

2. *HOPEA CURTISII*, King, n. sp. A tree 50 to 60 feet high: young branches slender, dark-coloured, lenticellate, almost glabrous. *Leaves* coriaceous, broadly ovate to ovate-oblong, shortly acuminate or acute, the base slightly unequal-sided, rounded, rarely sub-cuneate; both surfaces glabrous, the upper slightly puberulous on the midrib near the base, the lower with several hairy glands at the base, the midrib sparsely and minutely stellate-puberulous; main nerves 10 to 13 pairs, curving, ascending, prominent beneath; length 3·5 to 4·5 in., breadth 1·75 to 2·5 in.; petiole ·4 in., puberulous when young. *Panicles* axillary and terminal, lax, few-flowered. *Flowers* about ·2 in. long, pedicelled. *Sepals* broadly ovate, blunt, concave, tomentose outside, glabrous inside; the inner two rather smaller and more glabrous than the others. *Petals* oblong, oblique, falcate, obtuse, partially tomentose outside, glabrous inside. *Stamens* 10, the filaments short, dilated; anthers ovate, short, the connective with an apical awn longer than the anther. *Ovary* broadly ovate, puberulous at the truncate apex, otherwise glabrous: stylo short. *Ripe fruit* ovoid, apiculate, pale strinate, ·3 in. long; outer two sepals accrescent, narrowly-oblong, reticulate, membranous, obscurely 5-nerved, obtuse, slightly narrowed to the concave smooth base, 1·75 to 2·5 in. long and from ·35 to ·6 in. broad; the three inner non-acrescent sepals about as long as the fruit.

Penang: Curtis No. 1562. Perak: King's Collector, 8161.

3. *HOPEA MICRANTHA*, Hook. fil. in Trans. Linn. Soc., xxiii, 160. A tree 60 to 80 feet high: young branches slender with dark-coloured, lenticellate bark and minute brownish pubescence. *Leaves* coriaceous,

ovate-lanceolate or oblong-lanceolate, bluntly caudate-acuminate; the base slightly cuneate or sometimes broad, rounded and slightly unequal; both surfaces glabrous except the pubescent midrib: main nerves numerous, not much more prominent than the secondary, and both indistinct; length 2 to 4 in., breadth .8 to 1.75 in.; petiole .25 to .4 in. minutely tomentose. *Panicles* axillary and terminal, numerous, short, spreading, 1 to 1.5 in. long, puberulous or glabrous. *Flowers* .15 to .25 in. long, shortly pedicellate. *Sepals* sub-equal, ovate-rotund, sub-acute or obtuse, puberulous and resinous outside, glabrous inside. *Petals* twice as long as the sepals, broadly oblong-obtuse, silky outside except on one side, glabrous inside. *Stamens* about 12, the filaments dilated in the lower half, longer than the ovate anthers; the connective produced into a single apical awn longer than the stamen. *Ovary* elongated, often constricted in the middle, glabrous; style very short, stigma minute. *Ripe fruit* ovoid, apiculate, .3 in. long, striate, closely embraced by the 3 inner sepals which about equal it in length; the outer two sepals accrescent, oblanceolate, obtuse, tapering to the concave base, reticulate, 7-nerved, 1.75 to 2 in. long, and .2 to .25 in. broad. A. DC. Prod. XVI. 2, p. 634. Dyer in Hook. fil. Fl. Br. Ind. I, 310. Burck in Ann. Bot. Jard. Buitenzorg, VI, 238.

Malacca; Maingay (Kew Distrib.) No. 210. Penang: Curtis, Nos. 167, 266, 1397. Perak: King's Collector, Nos. 3525, 8170. DISTRIB. Borneo: Bangka, Sumatra.

Mr. Curtis notes on the Penang specimens of this, that the bark of the tree is smooth and of a grey colour, whereas the bark of its close ally *H. intermedia* is fissured like that of *Shorea parviflora*. The species of *Hopoa* with numerous indistinct nerves, (Sect. *Dryobalanoides*) are not easy to distinguish from each other in the Herbarium. *H. Mengarawan*, Miq., a species published two years earlier than this (i. e., in 1860), comes very near this, and the two may possibly prove to be identical, in which case Miquel's name must be adopted. *Hopoa cernua*, Teyssm. and Binn. was described by its authors from a plant originally obtained from Sumatra, but cultivated in the Buitenzorg Garden. It differs from *H. Mengarawan* and from *H. micrantha* in having larger leaves with more prominent nerves. Its authors were doubtful as to its being really distinct from *H. Mengarawan*, and I think these doubts were well founded. Under the species named *H. Dryobalanoides* by Miquel (l. c.) there are, Dr. Burck asserts, two plants. One of these collected at Soengiepagoe in Sumatra, is, he says, simply *H. Mengarawan*, Miq., and it is the fruit of this which Miquel describes under his *H. Dryobalanoides*. The other specimen from Priaman in Sumatra is different, and it is to it that Dr. Burck (Ann. Bot. Jard. Buitenzorg VI., 241) desires to

restrict the name *H. Dryobalanoides*, Miq. There is in the Calcutta Herbarium an authentic specimen of the very gathering of the Soengie-pagoe plant on which Miquel worked, and I should refer it to *H. micrantha* Hook. fil.

Petalandra micrantha, Harssk. has been reduced by the authors of the Genera Plantarum (Vol. I. p. 193) to *Hopea*. It is however a different plant from this, and belongs to Miquel's section *Eu-hopea*, which is characterised by the nerves being prominent. By Dr. Burek, *Petalandra* is reduced to *Doona*.

4. *HOPEA INTERMEDIA*, King n. sp. A tree 60 to 80 feet high : young branches rather dark-coloured, minutely lenticellate, puberulous. *Leaves* coriaceous, ovate-lanceolate, caudate-acuminate, the base cuneate, both surfaces glabrous; main nerves numerous, faint; length 2·5 to 3 in., breadth 1 to 1·35 in.; petiole '35 to '6 in. slender, puberulous but finally glabrous. *Panicles* as in *H. Mengarawan*, the flowers pedicellate. *Sepals* sub-equal; the two outer ovate, acuminate; the three inner broader and more obtuse, all resinous outside, glabrous and smooth inside. *Petals* twice as long as the sepals, narrowly oblong, obtuse, falcate, densely sericeous externally, glabrous within. *Stamens* 12; the filaments dilated, shorter than the anthers; the anthers short, crowned by a straight awn from the connective longer than the stamen. *Ovary* hour-glass shaped; style short, stigma small. *Ripe fruit* ovoid, apiculate, '2 in. long, pale, striate; the two outer sepals accrescent, narrowly oblong-obtuse, narrowed to the base, reticulate, obscurely 5- to 7-nerved, 1·25 to 1·5 in. long and '25 in. broad; the inner three sepals not accrescent, not longer than the fruit, and closely embracing it.

Penang: Curtis, No. 425 and 1398. Perak: King's Collector, No. 3709.

This species is no doubt near to *H. micrantha*, Hook. fil., but, according to Mr. Curtis, it is distinguishable from that, while growing, by its bark, this tree having a fissured bark like that of *Shorea parvifolia*, Dyer, while the bark of *H. micrantha* is smooth and grey. The petals of this are also more sericeous than those of *H. micrantha*, the filaments are shorter than the anthers (not longer, as in *H. micrantha*), the leaves are more glabrous, the petioles longer and more slender and more glabrous, and the fruit and accrescent sepals are smaller than in *H. micrantha*. I have therefore ventured, after much hesitation, to name this as a species, and from its relationship to *H. micrantha* and *H. Mengarawan*, I have called it *H. intermedia*. Its vernacular name in Penang is *Jankang*. It has been suggested that this plant should be referred to *H. Dryobalanoides*, Miq.—a course which I would have adopted with great pleasure had it been clear what *H. Dryobalanoides* really is.

But, as I have stated in a note under *H. micrantha*, *H. Dryobalanoides* appears to be a composite species; moreover, its author nowhere describes its flowers. For these reasons I think it ought to be suppressed as a species.

7. RETINODENDRON, Korthals.

Resinous trees, with the leaves, inflorescence, and flowers of *Vatica*. *Ripe fruit* globular, crowned by the persistent style, 1-celled, 1-seeded, the pericarp coriaceous, indehiscent. *Calyx* of ripe fruit slightly accrescent, the pieces oblong, nearly equal, and quite free from, and usually shorter than, the fruit (longer in *R. Kunstleri*). *Isauris* (sub-genus of *Vateria*) W and A. DISRUPT. Malaya and British India. Species about 10.

Isauris was established by Wight and Arnot as a sub-genus of *Vateria*, Linn. to receive the three species *Vateria lanceifolia* Roxb., *V. Roxburghiana*, Wight and *V. Ceylonica*, Wight (*Stemoporus Wightii*, Thw.) and its characters were, "Segments of the calyx ovate, acute, enlarging in fruit, petals falcate and about three times the length of the calyx: stamens 15 with oblong anther cells; style short; stigma clavate, 3-6 toothed; panicle axillary, shorter than the leaves." The other section of *Vateria* suggested by Wight was *Eu-Vateria* (the *Vateria* of Linnaeus and of which *V. indica*, L. is the type) and of this the characters are, "Calyx-segments obtuse, scarcely enlarging in fruit; petals oval, scarcely longer than the calyx: stamens 40 or 50 with linear anther-cells; style elongated; stigma acute; panicle large and terminal. Korthals, evidently overlooking Wight's Illustrations, published (*Verh. Nat. Gesch. Ned. Ind.* p. 56) his genus *Retinodendron* to cover one of the very plants (viz., *Vateria lanceifolia*, Roxb.) for which Wight and Arnot founded the sub-genus *Isauris*, and to this *Retinodendron* Korthals added his own Malayan species *R. Rassak* and *R. pauciflorum*. Although *Isauris* may have the priority as a sub-genus (Wight's Illustrations were published in 1840, and Korthals' book, just quoted, bears the date 1839-1842), *Retinodendron* takes precedence as a genus. The flowers of *Retinodendron* are exactly those of all the species of *Vatica* (except the anomalous *V. scaphula*, Roxb.) inasmuch as the segments of the calyx are slightly imbricate when the bud is very young, becoming valvate as the bud advances in age; the petals are much longer than broad, their apices are not inflexed in aestivation, and they are not spreading when expanded. The fruit itself is also practically that of *Vatica*; but the fruiting-calyx is different, for its lobes are invariably free from the beginning, they are pretty nearly equal to each other, but (although slightly accrescent) they are in most cases shorter than the fruit. As regards its calyx, *Retinodendron* is closely allied to *Vateria*, but it differs from *Vateria* in its flowers; for in *Vateria* the stamens are numerous (40 to 50), the petals are scarcely longer than the segments of the calyx and are spreading; moreover the inflorescence is longer in *Vateria* than in *Retinodendron*, and it is terminal. In short, *Retinodendron* has the flowers of *Vatica* and the fruit of *Vateria*. Dr. Burck forms *Retinodendron* and *Isauris* into sections of the genus *Vatica*, giving however characters to the section *Isauris* which form no part of Wight's original characters of it as a sub-section of *Vateria*. In Dr. Burck's section *Isauris*, "the calyx-lobes are all accrescent, sub-equal to the fruit, or much longer."

Fruiting-calyx shorter than the fruit.

Leaves 3·5 to 6 in. long: fruit ¼ in. in diam. 1. *R. pallidum*.

Leaves 7 to 10 in. long: fruit ⅙ in. in diam. 2. *R. Scortechinii*.

Fruiting-calyx longer than the fruit ... 3. *R. Kunatleri*.

1. *RETINODENDRON PALLIDIUM*, King. A small tree (fide Dyer): young branches slender, deciduously puberulous, their bark pale. *Leaves* coriaceous, oblong-lanceolate to narrowly elliptic, acuminate; the edges entire, recurved when dry; the base acute: both surfaces glabrous, the upper shining; main nerves 9 to 10 pairs, curving, oblique; length 3·5 to 6 in., breadth 1·2 to 1·8 in., petiole ¼ to ½ in. *Panicles* axillary, rarely extra-axillary, puberulous, 1 to 3 in. long. *Flowers* ¼ in. long; *Calyx-segments* ovate-lanceolate, scurfy-pubescent. *Petals* oblong, lanceolate, sub-acute, stellate-pubescent externally. *Anthers* broadly ovate, with a short blunt apiculus. *Ovary* puberulous; stigma capitate, lobed. *Fruit* globular, about ¼ in. in diam., glabrous, shining, very minutely and sparsely lepidote, partially covered in the lower half by the slightly unequal, spreading or sub-reflexed, narrowly-oblong, membranous, 3-nerved, reticulate calyx-lobes. *Vatica pallida*, Dyer in Hook. fil. Fl. Br. Ind. I, 302.

Penang: Maingay, on Government Hill, at an elevation of about 800 feet; Curtis, No. 117; King, Kunstler.

This is known only from Penang. It is evidently a rare tree. Its fruit somewhat resembles (except in size) that of *V. lanceaefolia*, Blume.

2. *RETINODENDRON SCORTECHINII*, King, n. sp. A tall tree: young branches rather stout, densely furfuraceous-pubescent. *Leaves* coriaceous, oblong, tapering to the sub-acute apex; the base slightly narrowed, rounded: both surfaces glabrous: main nerves 14 to 18 pairs, spreading, curving, prominent on the lower, depressed on the upper, surface when dry, the transverse venation bold: length 7 to 10 in., breadth 2·6 to 3·2 in., petiole ⅙ to ⅗ in. *Panicles* crowded towards the apices of the branches, mostly axillary, 2 to 2·5 in. long, the rachises brownish flocculent stellate-tomentose, as is the calyx externally. *Flowers* ⅙ in. long. *Calyx-lobes* ovate. *Petals* thick, oblong, blunt, puberulous externally, glabrous within. *Stamens* elliptic, apiculate. *Ovary* minutely tomentose; stigma clavate. *Ripe fruit* subglobular, sub-rugose, vertically grooved, minutely rufous-scurfy, about ⅙ in. in diam., laxly embraced in the lower half by the broadly ovate, membranous, many-nerved, reticulate, sub-equal calyx-lobes.

Perak: Scortechini, Nos. 1940 and 1942.

*The calyx-lobes are nearly equal in size, quite free from the fruit, much shorter, and they embrace only its lower half. This species is allied to *Retinodendron Russak*, Korth. (Nat. Gesch. Ned. Ind. 56, t. 8.)

but has broader leaves and much more condensed panicles than that species.

3. *RETINODENDRON KUNSTLERI*, King n. sp. A tree, 20 to 50 feet high, sometimes a shrub: young branches slender, deciduously stellate-puberulous. *Leaves* thinly coriaceous, elliptic-oblong to oblong-lanceolate, sometimes slightly obovate, sub-acute or shortly and bluntly acuminate; the base cuneate, rarely rounded: upper surface glabrous, the midrib and nerves pubescent; the lower quite glabrous; main nerves 7 to 9 pairs, ascending, slightly prominent beneath: length 2·25 to 4·5 in., breadth 1·25 to 1·75 in., petiole ·25 to ·4 in. *Racemes* axillary, 1 to 1·5 in. long, sparsely scaly. *Flowers* ·4 in. long. *Calyx-lobes* ovate-lanceolate, puberulous. *Petals* oblong-elliptic, oblique, obtuse, puberulous outside. *Anthers* slightly and sharply apiculate. *Ovary* puberulous, stigma capitate. *Ripe fruit* globular, with a long curved apical beak, glabrous, about ·25 in. in diam. *Calyx-lobes* all accrescent, sub-equal, oblong, tapering slightly to the sub-obtuse apex, the base slightly auricled, thickly membranous, glabrous, 3-nerved, the longest about 1·3 in. long, and ·35 in. broad, loosely surrounding, and longer than, the fruit.

Perak; Scortechini, Wray, King's Collector; very common at low elevations.

In this species all the five calyx-lobes are accrescent and of nearly equal size. They are quite free from the ripe fruit, round which they form a loose semi-inflated investiture. Its nearest ally is *Valica bancana*, Scheffer, (*Retinodendron bancanum*).

8. ISOPTERA, Scheffer.

A tall resinous tree. *Leaves* coriaceous, entire, feather-veined. *Flowers* in axillary or terminal panicles. *Calyx-tube* very short, the segments ovate-rotund, imbricate. *Stamens* 30 to 35, the anthers ovate, the cells divergent at the base, acute, the valves equal, the connective produced into an apical bristle-like appendage. *Ovary* 3-celled, the loculi bi-ovulate; the style short, terete, 3-angled at the apex. *Fruit* indehiscent, 1-seeded, the pericarp coriaceous. *Fruiting-calyx* an open cup not embracing the fruit; its lobes all slightly enlarged, spreading (not winged); the outer 3 rotund, broader than the 2 narrower inner lobes.

One species—Malayan.

1. *ISOPTERA BOENEENSIS*, Scheff. MSS. ex Burck in Ann. Bot. Jard. Buitenzorg VI, 222. A large tree: young branches slender, dark-coloured, sparsely lenticellate, glabrescent. *Leaves* coriaceous, oblong, sub-acute, slightly narrowed to the rounded base: upper surface glabrous except the puberulous midrib; the lower pale, glabrous; main

nerves 8 or 9 pairs, oblique, slightly curving, prominent beneath; length 4 to 5 in., breadth 1·75 to 2 in., petiole ·5 in. *Panicles* 4 to 6 in. long, stellate-pubescent; bracteoles caducous. *Flowers* shortly stalked. *Ocalysegments* minutely tomentose. *Petals* ·5 in. long, pale tomentose. *Stamens* 30 to 36, in 3 series, the filaments dilated at the base: anthers with equal valves. *Ovary* sericeous, style glabrous. *Ripe fruit* subglobose, acuminate, pale tomentose, about ·25 in. in diam.; fruiting-calyx forming a cup with a concave short tube embracing the fruit, the segments spreading, re-curved, the 3 outer ·65 in. in length and breadth, the 2 inner smaller. Heim, "Recherches sur les Dipterocarpacees," p. 51.

Pahang: Ridley, No. 2626. *DISTRIB.* Bangka, Borneo.

Leaf-specimens of what appear to be this tree were collected by Mr. Wray (Herb. No. 3426) in Upper Perak.

9. *BALANOCARPUS*, Beddome.

Glabrous or puberulous, rarely scabrid, resinous trees, with inconspicuous fugaceous stipules. *Leaves* entire, coriaceous or membranous, penni-nerved. *Flowers* secund, sessile or shortly pedicelled. *Sepals* distinct or united at the base, imbricated, two quite external to the others; in fruit sub-equal, only slightly enlarged, woody, thickened, and forming a 5-lobed cup round the base of (but rarely enveloping) the fruit, not adnate to it and never expanding into wings. *Petals* elliptic, obliquely acuminate, the apices slightly inflexed in bud or not inflexed at all. *Stamens* 15, attached to the bases of the petals, in 3 rows; or 10 in 2 rows, sub-equal, the filaments much dilated at the base, the connective prolonged into a straight apical awn longer than the ovate anther. *Torus* flat. *Ovary* 3-celled, cells 2-ovuled, ovules collateral. *Style* short. *Stigma* minute, entire. *Fruit* oblong or sub-globose, apiculate; the pericarp ligneous or sub-ligneous. *Seed* solitary, erect; cotyledons fleshy, plano-concave, the larger 2- or 3-lobed, or entire; the radicle prominent. Southern Peninsular India, Malaya. Probably 12 species.

Leaves glabrous, smooth.

Leaves ovate-lanceolate or ovate, caudate-acuminate.

Stamens 15

Fruit entirely enveloped in the slightly enlarged calyx ...

1. *B. Curtisii*.

Only the lower part of the fruit enveloped by the calyx ...

2. *B. penangianus*.

Stamens 10

3. *B. anomalus*.

Leaves narrowly oblong, gradually narrowed to the acute apex.

* Fruit 1·75 to 2·25 in. long: stamens 10 ... 4. *B. maximus*.

Fruit 1·5 in. long; leaves 4 to 6 in. long, with 9 or 10 pairs of bold parallel nerves ... 5. *B. Heimii*.

Fruit ·6 in. long: leaves 2·25 to 2·75 in. long, with 7 or 8 pairs of slightly prominent nerves ... 6. *B. Wrayi*.

Leaves stellate-pubescent, scabrid ... 7. *B. Hemsleyanus*.

1. *BALANOCARPUS CURTISII*, King. A tree 20 to 30 feet high: young branches slender, the bark dark-coloured, puberulous. *Leaves* membranous, ovate-lanceolate, bluntly caudate-acuminate, the base slightly cuneate: both surfaces glabrous, dull; main nerves 8 to 10 pairs, spreading, faint and scarcely more prominent than the secondary nerves; length 2 to 2·5 in., breadth ·75 to 1 in., petiole ·1 to ·15 in. *Panicles* axillary and terminal, shorter than the leaves, glabrescent, lax, each with a few 3- to 5-flowered spreading branches. *Flowers* secund, shortly pedicelled, ·15 in. long. *Sepals* distinct, sub-equal, thick, rotund-ovate, very obtuse, puberulous outside, glabrous inside, the edges slightly ciliate. *Petals* elliptic, obliquely shortly and bluntly acuminate, glabrescent inside, partly puberulous and partly glabrous outside. *Stamens* 15, in 3 rows, sub-equal; the filaments shorter than the anthers, dilated: anthers broadly elliptic, truncate, the connective produced into an apical awn longer than the stamen. *Ovary* cylindric, truncate, glabrous, the style short and stigma minute. *Fruit* smooth, globular, apiculate, crowned by the sub-sessile discoid stigma, enveloped by, but not adherent to, the slightly thickened sepals, ·25 to ·3 in. in diam. (calyx included).

Penang: Curtis, No. 1406. Perak: King's Collector, Nos. 3171, 3294, 6543; Wray, No. 2860.

2. *BALANOCARPUS PENANGIANUS*, King, n. sp. A tree 40 to 50 feet high: young branches slender, dark-coloured, lenticellate, slightly puberulous at the very tips. *Leaves* coriaceous, ovate-lanceolate or ovate-acuminate, often caudate-acuminate, the base slightly cuneate or almost rounded, the edges slightly undulate, both surfaces glabrous: main nerves 7 to 8 pairs, spreading and curving upwards, not prominent on either surface; length 1·75 to 4 in., breadth ·8 to 1·6 in., petiole ·25 to ·4 in. *Panicles* axillary and terminal, hoary-pubescent, many-flowered; the flowers secund, 7 to 9 on each lateral branchlet, pedicelled, ·15 to ·2 in. long. *Sepals* sub-equal, broadly ovate, sub-acute, yellowish-pulverulent, tomentose externally, glabrous internally. *Petals* oblong, obtuse, twisted and with the apices reflexed in aestivation, spreading

when expanded, minutely yellowish-pulverulent, tomentose outside, glabrous inside. *Stamens* 15, sub-equal: apical awn curved, longer than the anther. *Ovary* ovoid, narrowing upwards into the style; stigma minute. *Fruit* ovoid, very slightly apiculate, striate, pale pubescent, about .6 in. long and .3 in. in diam., the persistent calyx covering the lower third of the fruit, sub-glabrous, thickened and concave at the base; the teeth deltoid, spreading. *Richetia penangiana*, Heim in Bull. Soc. Liun. Paris, 1891, p. 980.

Pouang: on Government Hill, at an elevation of about 1,000 feet, Curtis, Nos. 1429 and 1393; Hallett, No. 188; King's Collector, No. 1534. Perak: King's Collector, Nos. 3333, 3707.

The leaves of this species, although larger, resemble those of *B. Curtisii*: but the fruits of the two are quite different. One of Mr. Curtis' specimens, No. 429 (communicated from Kew), forms the type of a new genus called *Richetia*, which M. Heim has founded (l. c. p., 975, also in his "*Recherches sur les Dipterocarpacees*" p. 50), without having seen its flowers. I have retained for this M. Heim's specific name, while referring it to Beddome's older genus. The vernacular name of the species is *Dammar Etam*.

3. *BALANOCARPUS ANOMALUS*, King. A tree: young branches slender, dark-coloured, minutely lenticellate, the tips puberulous. *Leaves* coriaceous, ovate, acuminate; the base broad, sub-cuneate; both surfaces glabrous; main nerves 6 or 7 pairs, ascending, curving, not prominent: length 2.25 to 2.5 in., breadth 1 to 1.3 in., petiole .6 to .7 in. *Panicles* numerous, axillary and terminal, longer than the leaves, pubescent, their lateral branchlets bearing 6 to 8 sub-second flowers. *Flowers* shortly pedicelled, .15 in. long. *Sepals* broadly ovate, connate at the base, obtuse, minutely tomentose outside, glabrous inside. *Petals* elliptic, blunt, yellowish adpressed-sericeous outside, glabrous inside, only about twice as long as the sepals, spreading and reflexed so as to expose the stamens and pistil. *Stamens* 10, in two rows; the filaments longer than the anthers, dilated; anther short, ovate, its connective produced into an apical awn as long as itself. *Ovary* ovoid, striate, pubescent, style short and thick, stigma small.

Kedah: Curtis, No. 1654.

Mr. Curtis is as yet the only collector of this, and his specimens have no fruit. I refer it to this genus, although its flowers differ from those of the other species known to me, in having petals only about twice as long as the sepals, spreading and reflexed so that the androgyneecium is quite exposed; and in having only 10 stamens. In other respects the specimens agree with *Balanocarpus*. Its vernacular name in Kedah is *Malaut*.

4. *BALANOCARPUS MAXIMUS*, King, n. sp. A tree 60 to 80 feet high : all parts except the inflorescence glabrous : young branches rather stout; the bark, loose, papery, lenticellate, pale. *Leaves* thinly coriaceous, oblong to elliptic-oblong, sub-acute, slightly narrowed to the rounded base; main nerves 7 to 9 pairs, slightly prominent beneath, the transverse veins slightly prominent when dry : length 5 to 7 in., breadth 2 to 2·5 in., petiole ·5 to ·6 in. *Panicles* axillary or terminal, about half as long as the leaves, few-flowered, minutely tomentose. *Flowers* sessile, ·6 or ·7 in. long. *Sepals* broadly ovate, the outer two tomentose, the inner three more or less glabrous externally, all glabrous internally, the inner two with ciliate margins. *Petals* much longer than the sepals, narrowly oblong, the apex erose, expanded and concave at the base, adpressed-pubescent outside and towards the apex inside, otherwise glabrous. *Stamens* 10, in two rows; anthers with a deflexed terminal appendage from the connective. *Ovary* elongate, narrowly conical, sericeous. *Style* rather short, glabrous; stigma small. *Ripe fruit* cylindrical, tapering to each end but most to the apiculate apex; pericarp woody, striate, sub-glabrous, pale-brown when dry : 1·75 to 2·25 in. long, and ·6 or ·7 in. in diam. *Persistent sepals* fibrous, forming a toothed cup about ·5 in. deep, embracing the base of the fruit.

Perak : King's Collector, Nos. 7987 and 8006.

The flowers of this fine species do not exactly answer to Beddome's diagnosis of the genus *Balanocarpus*, inasmuch as they have 10 instead of 15 stamens, and neither of the cotyledons is lobed. In other respects the flowers and fruit agree perfectly.

5. *BALANOCARPUS HEIMII*, King n. sp. A tree 50 to 60 feet high : young branches rather slender, the bark dark-coloured, puberulous or glabrescent. *Leaves* coriaceous, narrowly oblong, tapering to the acuminate apex, and slightly narrowed to the rounded base; upper surface glabrous, shining, the midrib minutely pubescent : lower surface glabrescent except the pubescent midrib and 9 or 10 pairs of ascending, bold, slightly-curving nerves : length 4 to 6 in., breadth 1 to 1·75 in.; petiole ·3 or ·4 in., with minute black tomentum. *Flowers* unknown. *Ripe carpels* cylindric, tapering to the apex, slightly narrowed to the base, 1·5 in. long and ·5 in. in diam.; the pericarp woody, sub-glabrous, sub-striate, dark-coloured when dry. *Persistent sepals* sub-equal, puberulous, thickened, forming a 5-lobed cup ·6 in. deep which embraces the base of the fruit. *Pierrea Penangiana*, Heim, MSS.

Penang : Curtis No. 273 (leaves only). Perak : King's Collector, No. 3718.

This tree, of which as yet only fruiting specimens have been found, so closely resembles the other Malayan species of *Balanocarpus* des-

cribed here, that I refer it without any hesitation to this genus. M. Curtis' leaf specimens of this have, I understand, received from M. Heim the MSS. name, *Pierrea penangiana*. The genus *Pierrea* has been founded by M. Heim (Bull. Soc. Linn. Paris, 1891, p. 958, and "Recherches sur les Dipterocarpacees", p. 78) on specimens of which the author has not (as he admits) had the advantage of seeing the flowers. The vernacular name of this tree in Penang is *Chengah*, and its timber is, according to Mr. Curtis, very valuable. In the State of Perak, on the mainland almost opposite Penang, another species (*B. Wrayi*) receives a similar vernacular name.

6. *BALANOCARPUS WRAYI*, King n. sp. A tree: young branches slender, dark-coloured, glabrous. *Leaves* coriaceous, narrowly oblong, gradually tapering from the middle to the acute apex; the base sub-cuneate or rounded, slightly unequal-sided: both surfaces glabrous; main nerves 7 or 8 pairs, curved, oblique, slightly prominent beneath: length 2·25 to 2·75 in., breadth ·75 in.; petiole ·25 in., transversely wrinkled. *Panicles* axillary and terminal, nearly as long as the leaves. *Flowers* unknown. *Fruit* ovoid, much apiculate, glabrous, ·6 in. long, covered in its lower two-thirds by the persistent sub-accreſcent glabrous calyx; outer two sepals smaller than the others, elliptic, obtuse, the inner three rotund, all thickened and concave.

Perak: Wray, No. 813.

Collected only once and without flowers. According to Mr. Wray the timber of this tree is valuable, and its vernacular name is *Chingi*, or *Chingal*. I refer this (in spite of the absence of flowers) to *Balanocarpus*, the other species of which it so closely resembles.

7. *BALANOCARPUS HEMSLEYANUS*, King, n. sp. A tree 50 to 100 feet high: young branches rather stout, rough, minutely lenticellate, puberulous. *Leaves* coriaceous, elliptic-oblong, sometimes slightly obovate, shortly and abruptly acuminate, slightly narrowed to the rounded or sub-emarginate base: upper surface glabrous except the minutely tomentose midrib; the lower scabrid from minute rigid stellately hairy tubercles which are most abundant on the stout midrib and nerves: main nerves 18 to 20 pairs, oblique, parallel, very prominent on the lower, obsolete on the upper, surface; length 7 to 12 in., breadth 3·25 to 5 in.; petiole ·6 to ·9 in. scabrid, pubescent. *Panicles* axillary or terminal, 3 to 7 in. long, scurfy stellate-pubescent; flowers rather crowded on the lateral branchlets, ·5 in. long, *Sepals* sub-equal, broadly ovate, acute, yellowish-tomentose externally, glabrous internally. *Petals* twice as long as the sepals, or longer, elliptic, oblique, obtuse, glabrous except a broad adpressed-sericeous band externally. *Stamens* 15, in three rows: the filaments dilated, unequal, longer than

the shortly ovate anthers; apical connectival appendage deflexed, curved, longer than the anther. Ovary elongated-conic, tomentose, tapering into the sparsely puberulous style; stigma small. Ripe fruit narrowly ovoid, apiculate, pale brownish-tomentose, 1.25 to 1.5 in. long, and .75 to 1 in. in diam. Persistent sepals nearly equal, their bases thickened, woody, pubescent, and concave, forming an irregularly 5-toothed cup which embraces the lower half of the fruit. *Shorea Hemsleyana*, King MSS. in Herb. Cal.

Penang: Curtis No. 2512. Perak: King's Collector, Nos. 5431, 6670, and 7562. Seortechini No. 1653.

This is an altogether anomalous species. It has leaves like several of the scabrid species of *Shorea*, such as *S. eximia* and *S. leprosula*. Its flowers are also more like those of *Shorea* than *Balanocarpus*; but its fruit is essentially that of the latter genus, in which, not without hesitation, I include it.

10. PACHYNOCARPUS, Hook. fil.

Resinous trees with the leaves and flowers of *Vatica*, but with sometimes only ten stamens. Fruit ovoid-globose, umbonate at the apex, 1-celled, 1-seeded, the pericarp densely coriaceous, splitting vertically. Calyx with five equal segments, at first almost free from the fruit, but the tube gradually accrescent, much thickened and adnate to the fruit, and finally embracing the whole of it except the apex. Seed pendulous, testa thin and adherent to the endocarp, cotyledons very thick and fleshy.

Leaves elliptic to oblong-elliptic, sub-acute or

shortly and obtusely acuminate...

.. 1. *P. Wallichii*.

Leaves broadly-elliptic or obovate-elliptic, the

apex very blunt ...

... 2. *P. Stapfianus*.

Dr. Burck (in Ann. Jard. Bot. Buitenzorg) expands the definition of the genus *Vatica* so as to include not only the closely allied *Synaptea*, but also the genera *Isauris* W. A., *Retinodendron*, Korth., and *Pachynocarpus* Hook. fil. To the union of *Synaptea* with *Vatica* I see no objection; for the whole difference between the two (as I have stated in a note under *Vatica*) consists in perfect freedom of the fruit in *Vatica* from the enlarged calyx, whereas in *Synaptea* there is a slight adhesion to the calyx at the very base. But for the inclusion of *Pachynocarpus*, I see no sufficient justification; for in this genus the calyx does not expand into membranous wings, but forms a dense fibro-cartilaginous cover for the fruit, which it tightly embraces, and to which it is quite adnate. As regards *Isauris* and *Retinodendron*, they appear to me to be undistinguishable from each other by any but trivial marks, but they differ sufficiently in calyx from *Vatica* to be treated as a genus under the older name *Retinodendron*.

1. PACHYNOCARPUS WALLICHII, King. A tree 40 to 70 feet high: young branches deciduously scurfy-puberulous, their bark pale-brown, sparsely lenticellate. Leaves coriaceous, elliptic to oblong-elliptic,

sub-acute, or shortly and obtusely acuminate, the base cuneate; both surfaces glabrous, the lower pale and prominently reticulate when dry: main nerves 6 to 9 pairs, slightly prominent beneath, ascending; length 4·5 to 8 in., breadth 1·5 to 3 in., petiole: 4 to 6 in. *Panicles* crowded near the apices of the branches, many-flowered, 2 to 4 in. long. *Calyx-lobes* deltoid, minutely velvety outside. *Petals* linear-oblong, obtuse, puberulous externally. *Stamens* broadly ovoid, minutely but obtusely apiculate. *Ovary* puberulous: stigma sub-capitate, lobed. *Ripe fruit* ovoid-globose, about 75 in. in diam., closely embraced by the slightly shorter, much thickened, persistent, fibrous or woody, rugose, enlarged calyx-lobes. *V. Wallichii* Dyer in Journ. Bot. 1878 p. 154. *Vatica ruminata*, Burek in Ann. Jard. Bot. Buitenzorg, VI, 227 t. 29, fig. 4.

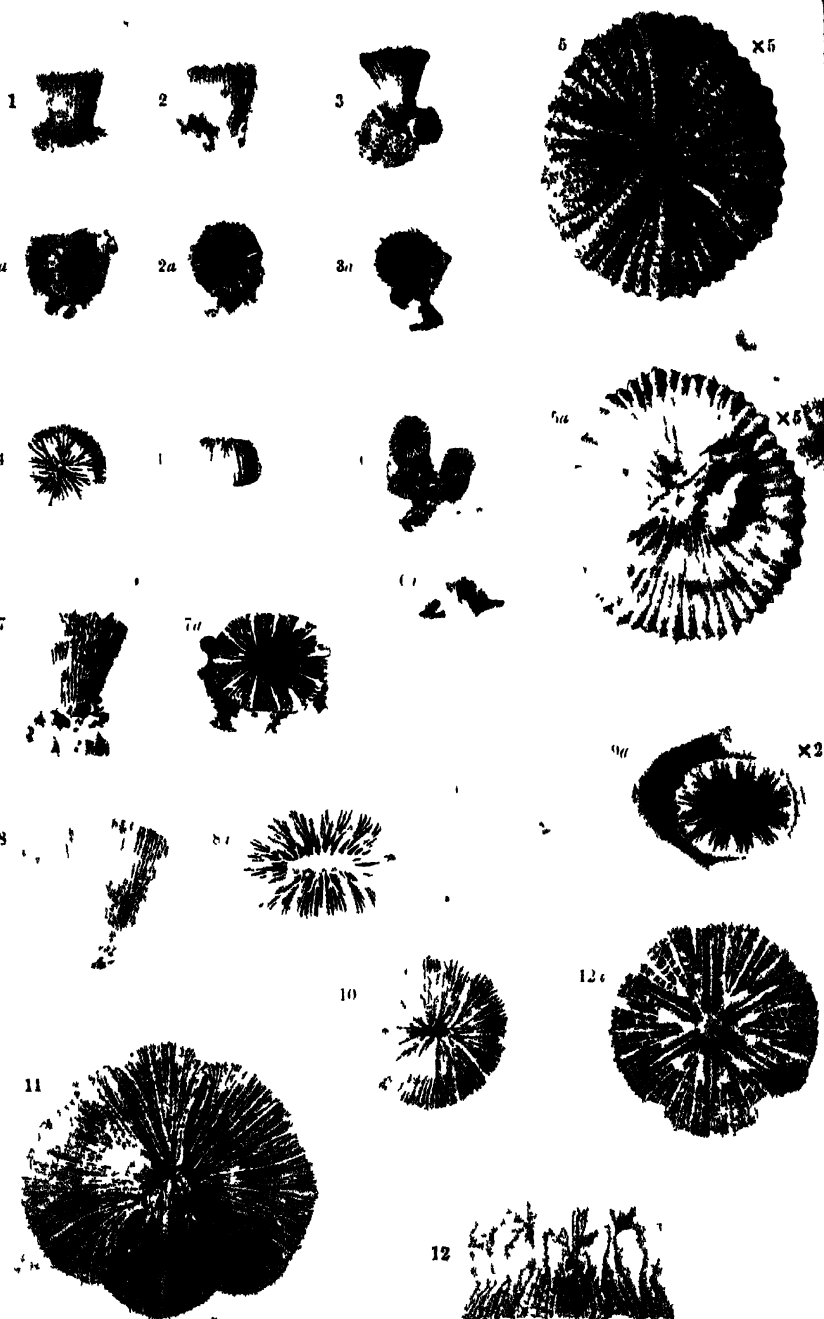
Penang: Wallich, Cat. No. 9018; Curtis Nos. 1161, 1218, 1391. Malacca: Maingay No. 201. Trang, King's Collector. Johore, Hallett and King. Perak: common at low elevations, King's Collector, Scotchini. **DISTRIB.**, Baugka.

In the young stages of the fruit of this species the calyx is quite small and embraces only the very base of it, much as in *Isauris*; but as the fruit expands the calyx grows, so that when ripe the fruit is, with the exception of its apex, closely embraced by the much thickened, lignified, obscurely toothed calyx-tube. This offers, therefore, a transition between *Isauris* and *Pachynocarpus*. And, indeed, it is to the former section that Dyer refers it (Journ. Bot., l. c.), and to which Burek refers his *D. ruminata*, a species which authentic specimens shew to be identical with this. Dr. Burek's species, *Vatica verrucosa* (Ann. Jard. Bot. Buitenzorg) appears also to come very near to this.

2. **PACHYNOCARPUS STAPFIANUS**, King, n. sp. A tree 80 to 100 feet high: young branches rather stout, scaly-pubescent at first, ultimately glabrous. *Leaves* coriaceous, broadly elliptic or obovate-elliptic, the apex broadly rounded, slightly narrowed to the rounded or sub-cuneate base: upper surface glabrous, shining, the lower paler, minutely and sparsely scurfy-puberulous on the midrib and nerves: main nerves 10 to 13 pairs, oblique, prominent on the lower, depressed on the upper, surface; length 5 to 8 in., breadth 2·75 to 4·5 in., petiole 65 to 1 in. *Flowers* unknown. *Ripe fruit* almost solitary, 2·5 to 3 in. long, on a woody raceme, globular, slightly apiculate, 1·25 in diam., closely invested by the gamosepalous, 5-toothed, thickened, woody, rugose, glaberrulous calyx.

Perak: King's Collector, Nos. 5932 and 6132.

This very distinct species was first recognised as a *Pachynocarpus* by Dr. O. Stapf, of the Kew Herbarium, after whom I have named it. Its flowers are as yet unknown, but it is readily identified by its leaves.



11. ANCISTROCLADUS, Wall

Smooth climbing shrubs with short supra-axillary often arrested and circumately hooked, branches. *Leaves* usually in terminal tufts, coriaceous, entire, reticulately feather veined, castipulate. *Flowers* usually small, very caducous, in terminal or lateral panicles. *Calycetube* at first short, adnate to the base of the ovary, its lobes imbricate, finally turbinate and adnate to the fruit, with the lobes unequally enlarged, spreading and membranous. *Stamens* 5 or 10, subperigynous. *Ovary* 1-celled, inferior, style sub-globose, persistent. *Stigmas* 3 erect, compressed, truncate, deciduous. *Ovule* solitary, erect or laterally affixed. *Seed* sub-globose, testa prolonged into the ramifications of the copious fleshy albumen, embryo short, straight. *Cotyledons* short, divergent. — *DISTRIB* Except *A. quinquecostis* in W Tropical Africa, confined to Tropical Asia and the Indian Archipelago. Species about 10.

I follow the authors of the *Genera Plantarum* and the *Flora of British India* in including *A. latifolia* in *Boptocarya*. I venture however to think that it would be better to keep it as the type of a distinct Natural Order as MM Planchon and De Candolle have done. Its characters do not fit well into the diagnosis of any other Order.

1. *ANCISTROCLADUS INTENSUS*, Wall Cat 1052. *Leaves* obovate or obovate oblong, blunt or sub-acute much narrowed at the base, panicles dichotomous, about half as long as the leaves. fruit smooth or slightly wrinkled, accrescent calyx lobes oblanceolate obtuse. Planchon in Ann. Sc Nat Ser 3, XIII 318. DC Prodr XVI 2 602 Dyer in Hook fil Fl Br Ind I, 299. *Acetabularia* sp. Guss Notul IV, 568, t 605 fig 2.

Andaman Islands. *DISTRIB* Burmah.

Var *pinangianus*, leaves sometimes oblanceolate oblong, acute or sub-acuminate. panicles slender, lax, about as long as the leaves. *Ancistrocladus pinangianus*, Wall Cat 1044. Planchon in Ann Sc Nat Ser 3, XIII, 318, A DC Prodr XVI 2, 603 Dyer in Hook fil Fl Br Ind I, 300.

Penang. Porter. Malacca. Mangay (Kew Distrib.) No 200. Singapore and Perak. King's Collectors. *DISTRIB* Bunka, Sumatra, Burmah.

On some Newly-recorded Corals from the Indian Seas, by A. ALCOCK, M.B., C.M.Z.S., Officiating Superintendent of the Indian Museum.

Plate V.

[Received May 22nd, Read June 7th].

As so little has been written about the coral fauna of the seas within the limits of the Indian peninsulas, the following account of the corals dredged in recent years by the "Investigator," and by the late Professor Wood-Mason, may be of interest.

No reference is made in this paper to the true reef-forming corals.

FAMILY TURBINOLIDÆ.

FLABELLUM, Lesson.

1. *Flabellum stokesi*, Edw. & Haime, Moseley.

Flabellum stokesi, *Flabellum oweni*, *Flabellum aculeatum*, *Flabellum spinosum*, all of Milne-Edwards and Haime, Hist. Nat. des Coralliaires, vol. ii. pp. 96, 87 and 88.

Flabellum variabile, Semper, Z. Wiss. Zool., vol. xxii, 1872, p. 245.

Flabellum stokesi, Moseley, Challenger Deep-sea Madreporaria, p. 172.

This species, not hitherto recorded in the Indian Fauna, is common from Ceylon, along the east coast of India, to the Andaman Islands, at depths of from 20 to 30 fathoms. The numerous specimens dredged by Professor Wood-Mason in the Andaman Sea, and by the "Investigator" elsewhere, fully bear out Professor Semper's views as to the identity of all the four species of MM. Milne-Edwards and Haime above-cited. Undoubtedly Professor Semper's name for the species is very appropriate; but, as Professor Moseley says, it is necessary to retain one of the original names, and he has selected the specific designation *stokesi* as being least likely to lead to error.

ACANTHOCYATHUS, Edw. & Haime.

2. *Acanthocyathus grayi*, Edw. & Haime.

Acanthocyathus grayi, Milne-Edwards and Haime, Hist. Nat. des Corall., vol. ii. p. 22.

This species was described by MM. Milne-Edwards and Haime as of "patric inconnue:" I have little hesitation in identifying with it a single specimen dredged by Professor Wood-Mason in the Andaman Sea.

PARACYATHUS, Edw. & Haime.

3. *Paracyathus indicus*, Duncan, var. nov. *gracilis*. Vide Duncan, Journ. Linn. Soc., Zool., vol xxi. 1889, p. 3.

The type of this species, which was brought by Dr. Anderson from Morgui, is in the Indian Museum, and I have now to record a distinct variety from the Bombay coast. This variety is characterized by its greater delicacy, and by the form of the corallum, which is subturbinato with a long slender pedicle.

4. *Paracyathus caratus*, n. sp. Pl. V figs. 1. 1a., very near *Paracyathus crassus*, Edw. & Haime.

Corallum with a broad encrusting base, gently expanding into a low, slightly curved, sub-circular calice.

Costæ distinct from the basal encrustment, finely and distantly granular, every alternate one conspicuously salient.

Calice sub-circular, open, deep: the marginal axes in the same plane.

The finely and distantly granular septa are in five incomplete crowded cycles, and do not project far into the calice; those of the first three cycles are exsert. Those of the incomplete fifth cycle are small, and unite with those of the fourth cycle just below the calicular margin, while those of the fourth cycle unite with those of the third deep down in the calyx. The pali are in the form of numerous strong salient and very regular denticulations of the septal margins,—excluding those of the last cycle: those of the primary septa are much the most distinct, not because they are larger but because they are isolated.

The columella is very small, deeply-seated and concave, consisting of numerous minute close-set papillæ.

The tips of the septa are coloured pale madder-brown.

Greatest height of corallum 9 mm., major diameter of calice 11 mm., minor diameter of calice 10 mm., diameter of basal constriction 7 mm.

From the Persian Gulf.

The species is characterized by the very distinct alternately-salient costæ, by the deep hollow calice into which the septa project but little, and by the isolation of the series of strong paliform teeth opposite the septa of the first cycle.

5. *Paracyathus fulvus*, n. sp. Plate V, figs. 2. 2a., near *Paracyathus crassus*, Edw. & H.

Corallum low, with an extensively encrusting base, and a short stout gently curved cylindrical peduncle which expands gradually into a circular slightly drooping calice.

Costæ indistinct at the base but gradually becoming distinct near

the margin of the calicle, where they are broad, finely granular and in all respects uniform.

The circular calice is open and moderately deep, with the marginal axes on the same plane.

The septa, which are in six systems, are exsert, with blunted slightly crenulated edges and distantly granular surfaces. Those of the first cycle are particularly distinct, being larger and stouter than those of any of the other cycles, projecting more into the calicle, and being more exsert beyond the margin. The quaternaries unite with the tertiaries near the columella. The pali have the form of stout granular pinnacles in three crowns, decreasing in size from without inwards, before all the septa but those of the last cycle.

The columella is small circular and slightly concave, and consists of numerous crowded granules.

In the type specimen the height of the corallum is 12.5 mm., the diameter of the calice 10.5 mm., and the diameter of the peduncle 7 mm.

The septa and pali are of a permanent tawny-brown colour.

The specimens in the Museum came from the telegraph cable in the Persian Gulf.

The distinctive characters of this species are the marked predominance of the primary septa, and the definition and regularity of the pali.

6. *Paracyathus porphyreus*, n. sp. Plate V, figs. 3. 3a, near *Paracyathus pulchellus*, Edw. & H.

Corallum with an encrusting base, above which it is suddenly constricted to again gradually expand into a slightly drooping, turbinate calice.

Costæ distinct from the base, equal, finely granular, depressed.

The calice is slightly elliptical, with marginal axes almost on the same plane: it is deep, but its cavity is about two-thirds filled by the septa.

The septa, which are crowded and exsert, are in four complete cycles in the young, with an incomplete fifth cycle in older examples: they have sharp and slightly crenulated edges and coarsely granular surfaces: those of the first two cycles are the most exsert: those of the fourth cycle unite with those of the third deep down in the calice behind the outer crown of pali.

The pali, which are in two crowns, are tall and large, those which stand opposite the tertiary septa being much the largest: the two crowns of pali, as seen from above, form a broad ring within the calice, very distinctly delimited both from the septa and from the columella.

The very deeply seated columella is large and concave, and consists of numerous close-set, blunt pinnacles.

In the type specimen the height of the corallum is 11·5 mm., the major diameter of the calice 10 mm. and the minor diameter 8 mm., and the diameter of the pedicle 5 mm.

The septa, pali and columella are of a dull purple-black colour.

Dredged off the Arrakan Coast by the "Investigator."

The distinctive characters of this species are (1) the delicacy of the calice wall in comparison with the stoutness of the septa and pali, (2) the large size of the pali and the very distinct definition of the palar zone, and (3) the punched-out appearance of the deep-seated columella.

HETEROCYATHUS, Edw. & Haime.

7. *Heterocyathus aquicostatus*, Edw. & Haime

Heterocyathus aquicostatus, Milne-Edwards and Haime, Hist. Nat. des Corall., vol. ii, p. 51.

Numerous specimens were dredged by Professor Wood-Mason in the Andaman Sea. Every specimen has the base perforated and tunnelled for the residence of a worm, which no doubt lives as a commensal with the coral zoophyte, as I shall be able to show in the parallel case of *Heteropsammia*.

8. *Heterocyathus philippensis*, Semper.

Heterocyathus philippensis, Semper, Zeitschr. Wiss. Zool., vol. xxii 1872, p. 254, taf. xx. figs 12-14.

Two specimens were dredged by Professor Wood-Mason in the Andaman Sea.

9. *Heterocyathus wood-masoni*, n. sp. Plate V, figs 4. 4a.

The corallum is either low and discoid, or if it is higher it is so faintly and truncately conical that the diameter of the base is not much greater than that of the shallow plane calice.

The costae, which begin on the flat basal surface near its margin, are equal, regular and very finely granular, and are separated from one another by deep incisions.

The calice is circular and quite flat, except for a central umbilication which marks the columella.

The septa are in four cycles, of which those of the third cycle are by far the smallest, while the primary septa along with the nearest quaternary of the adjoining half-system on each side are the largest. The six large primary septa with their large quaternary on each side thus form a six-rayed star, each ray consisting of three equal segments—namely a primary septum with a quaternary on each side of it.

The septa are hardly exsert, and they resemble the costæ, with which they are continuous, in being finely and uniformly granular.

Pali, in the form of series of very small denticles, stand before the primary and secondary septa, and also before the united margins of the tertiaries and quaternaries of each half-system.

The columella is distinct and consists of contorted granules. Dredged by Professor Wood-Mason in the Andaman Sea. Every specimen, as in the case of *H. equicostatus* and *H. philippensis*, is perforated and tunnelled in the base by a worm.

The distinctive characters of this species are (1) the circular calice almost or quite equal to the base in diameter, and not separated from the base by any constriction whatever, (2) the equivalence in size of the primary septa with the quaternaries standing immediately on each side, and (3) the small size of the pali.

DISCOTROCHUS, Edw. & Haimc.

10. *Discotrochus investigatoris*, n. sp. Plate V, figs. 5. 5a.

Corallum discoid, thick and coarse. The almost horizontal base culminates in a coarse scar from which very distinct coarsely granular costæ radiate, the costæ being equally distinct throughout their course and all of uniform size.

The calice is very shallow.

The septa, which are in four cycles, are slightly exsert, with thick coarsely spinate or dentate edges: those of the first cycle are the most prominent, and those of the third cycle the least so, but the difference in size between any of the cycles is not very marked.

The columella consists of a few papillæ.

Diameter of disk 8 mm., greatest thickness 2 mm.

The single specimen was dredged by the 'Investigator' off the Arrakan Coast, and appears to be a denuded fossil.

Its possible fossil character is supported by the fact that, as Professor Wood-Mason informed me, fossil Crustacea were dredged either at or very near the same place during the same surveying season. The exact spot at which the coral was dredged was off the Islands of Rámree and Cheduba.

In relation to the possible fossil nature of this species I may refer to two papers in the *Records of the Geological Survey of India*, vol. ix. ("On the Mud Volcanoes of Rámri and Cheduba" by F. R. Mallet, F. G. S., p. 188, and "On the Mineral Resources of Rámri, Cheduba, and the adjacent Islands," by the same author, p. 207), to which my attention has been very kindly directed by Mr. T. H. Holland of the Geological Survey.

In these papers there is notice of historical evidence of the recent elevation of the land in this vicinity and along with it of much recent coral.

The rocks of this region appear from Mr. Mallet's observations to consist (1) of petroliferous shales and sandstones with nodules and strangulated beds of impure limestone and with shallow seams of lignite and coal, and (2) of minutely crystalline grey limestone,—all the strata being very irregular and being generally steeply inclined: as regards age the conclusion appears to be that they are Eocene Tertiary (Nummulitic) though the possibility is noted that some may be Cretaceous.

POLYCYATHUS, Duncan.

12. *Polycyathus andamanensis*, n. sp. Pl. V, figs. 6. 6a.

The colony is large enough to cover a *Conus* shell, 70 mm. in length, with a thin spongy crust. The corallites are small, very short, cylindrical, and are placed close together.

The costæ are distinct from the basal encrustment upwards, are alternately salient, and are usually covered with a white, vitreous epitheca.

The calices are open, shallow, and either circular or slightly elliptical. The septa, which are in four nearly complete cycles, are slightly and irregularly exsert: they are nearly equal in size and are coarsely granular.

The pali, which are in the form of strong denticulations, are distinct before all the septa.

The small deep-seated columella consists of a few small close papillæ.

The height of the corallites ranges from 2 to 3 mm., and the diameter of their calice from 3 to 7 mm.

The encrusting base and the epitheca are of a porcelain white, as are the tips of the septa; the calice wall, the septa, pali and columella being of a purple-black colour.

Dredged in the Andaman Sea by Professor Wood-Mason.

FAMILY OCULINIDÆ.

LOPHOKHELIA, Edw. & Haime.

11. *Lophokelia*, sp.

Several dead branches of a species so eroded as not to be exactly determinable were dredged by the "Investigator" off the Konkan Coast in 446 fathoms.

I mention it as being the first observed occurrence of this family in Indian waters.

FAMILY EUPSAMMIDÆ.

BALANOPHYLLIA, Searles Wood, Duncan.

13. *Balanophyllia scabra*, n. sp. Pl. V, figs. 7, 7a.

Corallum simple, large, stoutly pedunculate, and gradually expanding, with a slight curve, into an elliptical calice.

The costae, which are distinct from the base, are equal in size, uniform, and closely and conspicuously dentate.

The elliptical calice is deep.

The septa, which are crowded and very thin, are in five cycles, of which the last is not complete. Those of the first and second cycles are of equal predominant size and are slightly exsert. The quaternaries, especially those immediately adjoining the large septa of the first and second cycles, are larger than the ternaries, and unite with them not far from the columella. In those quarter-systems in which a fifth cycle of septa is developed these unite with the septa of the fourth cycle not far below the calicular margin, and the quinary nearest the large septa of the first and second cycles becomes the largest of the united triad. The edges of all the septa except those of the two first cycles are either ragged or cut into deep serrations, the teeth nearest the columella standing upwards like pali.

The columella is well-developed, spongy, and either plane or concave.

In the type specimen the greatest height of the corallum is 26 mm., the major diameter of the calice 21 mm., and the minor diameter 15 mm.

Dredged by Professor Wood-Mason in the Andaman Sea.

EUPSAMMIA, Edw. & Haimo.

14. *Eupsammia regalis*, n. sp. Pl. V, figs. 8., 8a.

Corallum simple, free with traces of former adhesion, curved, cornute, compressed.

Costae distinct in the upper two-thirds of the corallum, occasionally trifurcating, united at regular intervals across the deepish intercostal incisions by horizontal spicules.

Calice elliptical with the major marginal axis on a slightly lower plane than the minor, deep, open.

The septa are in five cycles, of which the last is not complete, and are exsert. Those of the first two cycles are of equally predominant size and stoutness, while those of the other cycles are smaller and diminish in size in order, except that in the quarter-systems in which a fifth cycle is developed the quinary septum immediately adjoining the primary is larger than its neighbour of the fourth cycle.

The quinaries unite with the quaternaries much nearer to the columella than to the calicular margin, and close to the columella the quaternaries unite with the tertiaries.

All the septa are thick, spongy and perforate at their exsert tips and near the wall of the calice, but they soon become thin and dense with surfaces so finely granular as to appear quite smooth to the naked eye.

The columella is broad, spongy, and strongly convex.

The colour of the corallum is white, of the soft parts bright scarlet.

The greatest height of the corallum is 27.5 mm., the major diameter of the calice 25 mm., and the minor diameter 17.5 mm.

Dredged by the "Investigator," off Ceylon, in 32 fathoms.

HETEROPSAMMIA, Edw. & Haime.

15. *Heteropsammia geminata*, Verrill.

Heteropsammia geminata, Verrill, American Journal of Science and Arts, second series, vol. xlix. 1870, p. 370, fig. 1.

About two hundred and fifty specimens were dredged by Professor Wood-Mason in the Andaman Sea. All have the base perforated and tunnelled.

16. *Heteropsammia rotundata*, Semper.

Heteropsammia rotundata, Semper, Zeitschr. Wiss. Zool., vol. xxii. 1870, p. 265, taf. xx, fig. 10.

I refer to this species several specimens from the Persian Gulf presented by Mr. W. T. Blandford, F.R.S.

17. *Heteropsammia aphrodes*, n. sp. Pl. V, figs. 9, 9a. Near *Heteropsammia ovalis*, Semper.

Corallum with a single calice, the wall formed of a fine lace-like reticulum (not spongy as in other species).

Calice oval and deep, its major diameter being not much less than that of the base—the basal "spur" excluded.

Septa in four beautifully regular and complete cycles. Those of the first two cycles are of equally predominant size, are exsert, and are very thick, inflated, spongy, and porose, even up to their edges. Those of the fourth cycle are rather larger than those of the third, and unite in front of them, with beautiful symmetry, near the columella.

The deeply seated columella is well developed, and is slightly concave.

The greatest height of an average corallum is 10 mm., with a calice having a major diameter of 10 mm., and a minor diameter of 8 mm.

Numerous living specimens were dredged by the "Investigator" off the Ganjam Coast, at a depth of 20-25 fathoms, and every one of them was provided with a commensal Sipunculoid worm.

With specimens kept alive for a short time on board it was observed that the worm was able to propel the coral in a rapid series of short jerky spiral movements.

The movements were performed with great ease, and there appears to be little doubt that we have here to do with a true case of commensalism, in which the worm serves the polyp as a locomotive agent, while the polyp affords particularly effectual protection—owing to its power of urtication—to the worm. As Professors Moseley and Semper observed in their species of *Heteropsammia*, the worm lives in a tunnel hollowed out of the coral-tissue, and no traces of any adventitious shell can be discovered forming a core.

In addition to the aperture for the exit of the worm, which is found in a special spur-like process of the base of the corallum, the side of the corallum about half way up is ringed with small punctures. Similar punctures are found in the coralla of other species of *Heteropsammia* and also *Heterocyathus*, and Professor Moseley regarded them as respiratory apertures for the use of the commensal worm.

DENDROPHYLLIA, Edw. & Haime.

18. *Dendrophyllia* sp.

From the Orissa Coast, at 10 fathoms, we have a bush-shaped colony of long slender cylindrical corallites resembling *Dendrophyllia gracilis*, Edw. & Haime, in all respects except in the form of the columella which is very strongly convex, in some cases almost styliform, instead of being plane.

CENOPSAMMIA, Edw. & Haime.

19. *Cenopsammia* sp.

From the Arrakau, Orissa and Ganjam Coasts respectively, we have three species of *Cenopsammia* of the type of *C. urvillii*, Edw. & Haime, the colonies being in massive tufts from which the units of the colony project little or not at all.

I consider it better not to name any of these species until we have more material for comparison.

RHODOPSAMMIA, Semper.

20. *Rhodopsammia carinata*, Semper.

Rhodopsammia carinata, Semper, Zeitschr. Wiss. Zool., vol. xxii. 1872, p. 257, taf. xix. fig. 6.

Numerous specimens were dredged by Professor Wood-Mason in the Andaman Sea, and by the "Investigator" off Ceylon in 32 fathoms. The gemmation from the calicular margin is well seen in both series of specimens.

21. *Rhodopsammia socialis*, Semper.*Rhodopsammia socialis*, Semper, tom. cit., p. 260, taf. xx. fig. 1-14.

Several specimens were dredged along with *R. carinata*, both in the Andaman Sea and off Ceylon. Among them is a specimen showing budding to the third generation.

FAMILY FUNGIDÆ.

CYCLOSERIS Edw. & Haime.

22. *Cycloseris mycoides*, n. sp. Pl. V, fig. 10.

Corallum almost circular, gently convex, with a flat or slightly concave base, from the centre of which close-set, equidistant, alternately, unequal coste radiate—the larger ones being finely lamellar, while the alternate smaller ones are composed of a single series of fine granules.

The septa, which are in seven very regular and complete cycles, are close-set and convex, with very finely and evenly denticulate edges and very finely and striately granular surfaces. Those of the first two cycles are of equally predominant size and touch the columella, while those of the last two cycles do not reach half-way to the columella. Those of the fifth cycle unite together in each quarter-system in front of their quaternary, the united pairs then showing a tendency to further unite in each half-system in front of their tertiary.

The central fossa is long, narrow, and moderately deep, and lodges a narrow loosely reticulate columella.

The syntacticulae are numerous and coarse.

In an average specimen the major diameter of the corallum is 23.5 mm., and the minor diameter 23 mm.

Dredged by Professor Wood-Mason in the Andaman Sea.

This species differs from *Cycloseris cyclolilis*, with which I have compared it, in the much greater delicacy regularity and symmetry of all its parts: it appears to be near *Cycloseris sinensis*, Edw. & H., and *Cycloseris discus*, Quelch.

DIASERIS, Edw. & Haime.

23. *Diaseris distorta*, Edw. & Haime.

Diaseris distorta, Milne Edwards and Haime, Hist. Nat. des Corall., vol. iii. p. 55, pl. D. 12, fig. 4.

Several specimens were dredged by Professor Wood-Mason in the Andaman Sea.

24. *Diaseris freycineti*, Edw. & Haime.

Diaseris freycineti, Milne-Edwards and Haime, Hist. Nat. des Corall., vol. iii. p. 55; and Semper, Zeitschr. Wiss. Zool., vol. xxii., 1872, p. 269, taf. xxi. fig. 1.

Several specimens dredged by Professor Wood-Mason in the Andaman Sea. In all the specimens, except two very young ones, the corallum is tunnelled apparently by a worm, just as in *Heterocyathus* and *Heteropsammia*, except that the aperture for the exit of the worm instead of being on the base is at one side of the oral fossa.

Before going on to describe a new species of the genus *Diaseris*, I must here remark that our beautiful series of *Diaseris freycineti*, and of the species about to be described do not support Mr. Queleh's opinion that the species of *Diaseris* are merely the results of the fracture and repair of *Cycloseris*.

25. *Diaseris fragilis*, n. sp. Pl. V, fig. 11.

The corallum is flat and very thin. In its youngest stage the corallum is almost circular with a triangular lobe breaking through an arc of about 90° of its circumference and projecting to form a sector of a much larger circle.

This lobe appears with age to spread round the original disk until this in turn becomes a small lobe occupying not much more than 50° of the circumference of the grown coral.

The full-grown coral forms an irregular ellipse divided into four lobes in opposite pairs, one pair being large (each lobe with a margin equal to about 180° of the entire circumference), and the other pair being small (each lobe with a margin extending through about 55° of the entire circumference). The lobes are very distinctly delimited up to the very centre of the corallum, which has the appearance of being composed of four artificially cemented pieces.

The costæ are in the form of very close delicate granular striations, alternately unequal.

The septa, which appear to be in eight cycles in six irregular systems, are thin with very finely and evenly serrate edges and granular surfaces: they are usually low, but the primaries and secondaries are unequally elevated near the fossa.

The synapticulæ near the centre are coarse, close and equidistant, and form regularly concentric circles, as in *Bathyactis*, throughout the interseptal chambers: near the margin they are much more delicate, and are not equidistant.

The fossa is conspicuous and a columella is usually absent, although sometimes a few distant papillæ are visible.

The largest specimen measures 50 mm. in the major diameter and 41 mm. in the minor and is not more than 6.5 mm. in height to the tip of the highest septum.

Dredged in the Andaman Sea by Professor Wood-Mason.

BATHYACTIS, Moseley.

26. *Bathyactis stephanus*, n. sp. Pl. V, figs. 12, 12a.

Corallum very thin and fragile, circular, strongly convex, the base forming an inverted bowl. The costæ radiate from the centre and gradually become laminar or crested as they approach the margin: the primaries are the most distinct.

Septa in six regular systems and five complete cycles arranged exactly as in *Bathyactis symmetrica*. Those of the first three cycles are foliaceous, with crenulated surfaces and irregularly lobate edges.

Synapticula distinct in ten to twelve zones, which though fairly regularly concentric do not at once attract the eye by this character as they do in *Bathyactis symmetrica*. Columella distinct, umbilicated.

Diameter of corallum 34 mm., its greatest height from margin of base to the tips of the tallest foliaceous primary septa 17 mm.

The colour of the soft parts is a ruddy mauve.

Four specimens from the Bay of Bengal off the Kistna Delta in 678 fathoms.

EXPLANATION OF THE PLATE.

- Figs. 1, 1a, *Paracyathus cavatus*, natural size;
 Figs. 2, 2a, *Paracyathus fulvus*, natural size;
 Figs. 3, 3a, *Paracyathus porphyreus*, natural size;
 Figs. 4, 4a, *Heterocyathus wood-masoni*, natural size;
 Figs. 5, 5a, *Discotrochus investigatoris*, enlarged five times;
 Figs. 6, 6a, *Polycyathus andamanensis*, natural size;
 Figs. 7, 7a, *Balanophyllia scabra*, natural size;
 Figs. 8, 8a, *Eupsammia regalis*, natural size;
 Fig. 9, *Heteropsammia aphrodes*, natural size; and 9a, viewed from above, enlarged twice;
 Fig. 10, *Cycloseris mycoides*, natural size;
 Fig. 11, *Diaseris fragilis*, natural size;
 Figs. 12, 12a, *Bathyactis stephanus*, natural size.

